

https://dspace.org/

Marketing of breast milk substitutes in relation to crying, sleeping and posseting on Instagram by influencers in South Africa, 2018-2020

Pilime, Sukoluhle

2021
https://hdl.handle.net/10539/33462

Downloaded from a DSpace repository. https://dspace.org/

MARKETING OF BREAST MILK SUBSTITUTES IN RELATION TO CRYING, SLEEPING AND POSSETING ON INSTAGRAM BY INFLUENCERS IN SOUTH AFRICA, 2018-2020

Sukoluhle Pilime

Research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, in partial fulfilment of the requirements for a Master in Public Health

Johannesburg, October 2021

DECLARATION

I, Sukoluhle Pilime, hereby declare that this research report is my own original work, with guidance in the write up and statistical package, NVivo 12 from my supervisor. It has not been submitted in part or substance for an award at any other university.

The data that were used in the write up of this report were accessed from publicly accessible Instagram posts of South African Instagram Influencers.



Student signature

Sukoluhle Pilime

Student No: 1304095

Johannesburg

October 2021

DEDICATION

I would like to express my sincere gratitude to my husband Elton, for his support throughout my pursuit of this MPH degree. From the pick-ups and drop offs every day since day one of first year registration, to the very last day of formal class attendance, and his continued emotional and practical support throughout the program, I wouldn't have asked for a better partner to embark on this journey with.

To my son, Michael, carrying you in my womb during this course was an absolute delight. At three weeks old you showed you were a real champ, defying odds of the trials you faced at birth and attending lectures with mummy! I love you so much and may you conquer your own academic journey too!

To my mum, this whole academic journey began with you twenty-three years ago and you have continued supporting me through it all. I am truly grateful.

To Sara, for always being patient with me and supporting me beyond your call of duty. I will forever be thankful.

Above all else, I want to thank the Lord for ordaining me with the intellectual capacity of tackling such a demanding course and for guiding me through every step of the way to its completion. I will forever exalt Your name for all the blessings that you bestow upon me in my life.

ABSTRACT

Introduction

Global trends have seen a decline in the rates of breastfeeding. This has resulted in increased infant mortality due to infectious diseases and inappropriate feeding practices. The decline in breastfeeding rates is attributed partly to increased and aggressive marketing of breastmilk supplements by companies that produce them, despite several regulations prohibiting marketing targeted at parents and caregivers of children less than six months of age. With the progressive use of social media, marketing has shifted from traditional methods to the use of influencers, who command a huge following on their social media accounts and influence the daily decisions of the thousands and sometimes millions of people who follow them. This study investigates the marketing of breastmilk substitutes in relation to crying and sleeping and posseting by companies using South African Instagram influencers.

Methods

This was a retrospective study, which used a mixed methods approach to analyse posts related to infant feeding methods that were made by South African Instagram influencers between January 2018 to December 2020. A total of seven influencers, their 62 Instagram posts and 18 333 subsequent follower comments were included in the sample. Framing analysis was used to analyse qualitative data in NVivo 12 software while quantitative data were analysed manually.

Results

Of the 62 posts that addressed infant feeding methods from the 7 influencers, 27 were manufacturer-sponsored advertisements (some of which violated local regulations), while 35 posts encouraged breastfeeding. The main qualitative themes showed that breastmilk substitute products are portrayed as solutions to infants who constantly cry and have trouble with sleep. This is done by manufacturers through influencers, who are paid to market these products to their followers, depicting this as their own personal methods of infant feeding. Breastfeeding posts were not sponsored.

Conclusion

Closer monitoring of social media and stiffer regulations should be enforced for companies marketing BMS on social media. Influencers and health professionals giving advice contrary to the guidelines from the WHO should be reported according to Regulation 991 and made accountable. Nevertheless, the potential for Instagram influencers to promote and normalise breastfeeding should be considered by health communicators.

ACKNOWLEDGEMENTS

I would like to acknowledge Dr Sara Jewett Nieuwoudt, stalwart academic and supervisor par-excellence. Thank you for your patience and great commitment towards the completion of this degree. I truly appreciate all your efforts above call of duty that you've made towards my academic journey. Your work is unmatched, and I hope all your dreams come true.

TABLE OF CONTENTS

PREAMBLE

DECLARATION II

DEDICATION III

ABSTRACT IV

ACKNOWLEDGEMENTS VI

TABLE OF CONTENTS VII

LIST OF FIGURES AND IMAGES IX

LIST OF TABLES X

LIST OF ABBREVIATIONS XI

DEFINITION OF KEY TERMS XII

CHAPTER 1. INTRODUCTION 1

1.1 Background *1*

1.2 Literature review *5*

1.2.1 Breast Milk Substitutes marketing 5

1.2.2 Marketing of BMS through social media influencers. 5

1.2.3 Framing and discourse to influence consumer uptake of BMS on social media 6

1.2.4 Associations of crying, sleeping and posseting and BMS 7

1.2.5 Efforts to enforce regulations 7

1.3 Problem statement *8*

1.4 Justification *8*

1.5 Research question *9*

1.6 Aim *9*

1.7 Objectives *9*

CHAPTER 2. MANUSCRIPT: INTERNATIONAL BREASTFEEDING JOURNAL *(6323 WORDS)* 10

Manuscript Preamble *10*

Abstract [350] *12*

Background *14*

Methods *17*

Study design 17

Study setting 17

Study population and sampling strategy 17

Data processing and analysis 20

Results *22*

South African Influencer reach 22

Influencer infant feeding focus 23
Influencer framing of BMS in relation to crying, sleeping or posseting 25
Influencer framing of breastfeeding in relation to crying, sleeping and posseting 30
Health frames by professionals on influencers' posts 37
Discussion of findings *38*
Conclusion *45*
Recommendations *46*
References *47*
Declarations *48*
Ethics approval and consent to participate 48
Consent for publication 48
Availability of data and materials 48
Competing interests 48
Funding 48
Authors' contributions 48
Author's information 48
CHAPTER 4. EXTENDED RESULTS 50
4.1 Introduction *50*
4.2 Results *50*
CHAPTER 5. OVERALL DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS 53
5.1 Introduction *53*
5.1.1 Discussion of key findings 53
5.1.2 Conclusions 56
5.2 Recommendations *56*
REFERENCES 60
Appendix 1: Plagiarism declaration and TurnItIn Report *68*
Appendix 2: Ethics waiver *70*
Appendix 3: International Breastfeeding Journal guidelines for authors *71*
Appendix 4: Signed letter stating the contribution of the candidate to the manuscript *75*

LIST OF FIGURES AND IMAGES

Figure 1: Conceptual framework for the effects of breastmilk substitutes marketing on breastfeeding practises ……..4

Figure 2: Key Elements of Regulation 991……..15

Image 1: NUK pacifier advert and associated caption …….25

Image 2: Influencer marketing BMS for infants less than 6 months of age ……27

Image 3: Influencer breastfeeding image and caption …….28

Image 4: Influencer breastfeeding image and caption …….29

LIST OF TABLES

Table 1: Boolean searches …….. 18

Table 2: Dimensions captured for quantitative analysis ……. 20

Table 3: Follower engagement for each influencer's infant feeding posts ……. 22

Table 4: Types of posts by the influencers and potential Regulation 991 violations…...…….…...24

Table 5:Post by specific type of BMS …….24

Table 6: Influencer framing(s) of BMS in relation to crying, sleeping and posseting……....25

Table 7: Follower's framing of comments relating to posts initiated by influencers.….34

Table 8: Frequency of breastfeeding mentions in relation to crying, sleeping or posseting, by Influencer …….…...52

LIST OF ABBREVIATIONS

BMS	Breast Milk Substitutes
EBF	Exclusive Breastfeeding
ICMBMS	International Code for Marketing of Breastmilk Substitutes
IYCF	Infant and Young Child Feeding
LMIC	Low- and Middle-Income Countries
R991	Regulation 991
UNICEF	United Nations Children's Fund
WHA	World Health Assembly
WHO	World Health Organization

DEFINITION OF KEY TERMS

Breast milk substitutes - any foods or liquids that are marketed or presented as a total or partial replacement of breast milk (1)

Influencer Marketing – utilising the services of individuals who have influence on the decisions of potential buyers and orienting marketing activities around these individuals to drive a message to the individuals that follow them (4)

Influencers - social media personalities who have achieved credibility in a certain industry from regularly posting various content on their pages (2)

Pacifier/ Dummy – a soothing device made of plastic or rubber that is used to calm babies (6)

R991 Regulations – Regulations relating to food stuffs of infants and young children, developed to ensure responsible marketing by manufacturers (5)

Social media – platforms for electronic networking and communication, where users create communities online and are able to share information, personal messages and other content (3)

CHAPTER 1. INTRODUCTION

While this research report is being submitted in manuscript form, additional chapters are included that enable expanded explanation of key study elements. The overall structure of the report includes the Introduction and then moves on to the Manuscript chapter, which comprises the methods, results, discussion, conclusion and recommendations of the study formatted for a particular journal. This is followed by a short chapter that describe additional results that were part of the overall research, but not included in the manuscript. The report then concludes with the overall discussion, conclusions and recommendations that correspond to the overall aim and objectives of the research.

The Introduction chapter describes the importance of the study and the impact of the marketing of breastmilk substitutes (BMS) on the infant feeding decisions that parents, and caregivers make and subsequently to the health of the infants. The chapter includes the background of why the topic was researched, the literature review, a problem statement, the justification for conducting the study due to the public health implications of the marketing of BMS and the study aim and objectives.

1.1 Background

Exclusive breastfeeding (EBF) is the feeding of infants with breast milk only for the first six months of life, with no other liquids or solids given, except oral rehydration solution, vitamin drops or syrup and minerals or medicines (7). The World Health Organization (WHO) emphasizes the importance of exclusive breastfeeding as an effective way to achieve optimal growth and health among infants (7). Exclusively breastfeeding infants for the first six months of life has the potential of saving 1.3 million children from dying if universal coverage were to be increased by 90% (8). According to the WHO, EBF reduces gastro-intestinal infections, stunted growth and allergic reactions (7). Accumulated international research by the Bellagio Child Survival Group found that infants under six months who are not breastfed are seven times more likely to be at risk from death due to diarrhoea and five times more likely to be at risk of death from pneumonia compared to those who are breastfed (9). Mothers who breastfeed are at a lower risk of maternal obesity and have a smaller waist circumference which lowers their risk of diabetes mellitus (10). Breastfeeding also has a

protective effect against breast cancer, and this protection seems greater for women who have extended periods of breastfeeding in their lifetime (11). Apart from its benefits to the mother, EBF has also been shown to reduce the rates of infant morbidity and mortality associated with infectious diseases in both low and high income settings (7).

Globally, only 42% of new-born babies are breastfed within the first hour of birth and two in five infants are exclusively breastfed within the first six months of life, while less than three quarters of children aged 12-15 months are still breastfed (8). South Africa is similarly affected, with the rate of breastfeeding remaining low despite breastfeeding promotion being a national health priority (12). Estimates for EBF for children under six months ranges from 8% (13) to 32% (14), and the percentage of children who are breastfed tends to decrease during the course of the six months, from 44% among infants aged 0-1 month to 24% among infants aged 4-5 months (8). Despite WHO recommendations for continued on demand breastfeeding up two years of age and beyond, South Africa's breastfeeding rates tend to decrease rapidly after six months of age (13).

Problems with excessive crying and sleeping and posseting, also known as "spitting up", are found in approximately 20% of infants (15),and have been shown to be major factors that determine parental decisions for infant feeding methods (16). Maternal stress, which affects the general health of the mother, has an effect on the quantity and quality of milk produced (17). This, in combination with an infant who seems to be constantly hungry, has been found to be motivating factors for a mother to initiate alternate feeding methods (18). Studies have shown that constant crying by infants is also often associated with the perception that the mother has inadequate breastmilk thereby resorting to the use of breastmilk substitutes (15).

Breastmilk Substitutes are defined as any foods that are marketed or presented as a total or partial replacement of breast milk (19). The WHO recommends exclusive breastfeeding for the first six months of life; therefore any food or drink advertised for children less than six months of age is regarded as BMS (7). These include but are not limited to juices or teas, waters, processed foods or any other products marketed to be suitable for children less than six months of age (14). Breastfeeding is also recommended up to two years or beyond, therefore any milk products marketed to replace the breastmilk part of a child's diet between six months and two years are considered as BMS (14). Teats and bottles are also implied by the International Code for Marketing of Breastmilk Substitutes (ICMBMS or herein, the

Code), while UNICEF and countries like Vietnam has expanded this definition to include the marketing of soothers / pacifiers as a violation of national legislation, according to their decree on the trading in and use of nutritious products for infants, feeding bottles and teats (20). For the purpose of this research, this wider definition of BMS is adopted, although the marketing of soothers or pacifiers would not be considered a strict violation of the regulations relating to foodstuffs for infants and young children in many countries, including South Africa.

Marketing through advertisements has been shown to have an influence on social norms through illustrating that certain behaviours are common and acceptable in the population (21). As such, companies producing BMS use aggressive marketing tactics in order to push the sale of their products (21). Some of these tactics include donating formula to new mothers and offering of gifts to healthcare workers for them to advocate for their products (22). With the intensified use of the internet and social media, most companies are shifting to the use of social media to market their products through influencers (23). Influencers are social media personalities who have achieved credibility in a certain industry from regularly posting various content on their pages (24). Social media influencers are usually people who have acquired a large followership on their social media accounts and are paid by companies to market their products (24). The paid collaborations between companies and social media influencers are usually recognized by the caption "sponsored post", which reflects that a third-party source sponsors the content being shared (25). Recently, BMS manufacturers have been known to pay influencers to market their products for them, taking advantage of their huge followership and the credibility assigned to them by their followers. This has the potential of causing a significant decrease in the WHO recommended breastfeeding practices for infants less than two years of age (26).

The level of indiscriminate marketing practised by the influencers on the manufacturers' behalf can be harmful to the public through the building up of brand recognition, and this leads to inappropriate or unnecessary purchasing of BMS (21). The conceptual framework shown in Figure 1 is from a published study on the impact of marketing of BMS on WHO recommended breastfeeding practises (21). Based on the Theory of Planned Behaviour (27), the framework illustrates the impact that marketing has on the decision to use BMS. Of interest to this study is the marketing to the public through advice to use formula by

influencers on social media, creating social norms and attitudes which favour BMS, and lack of confidence of the mother to breastfeed, resulting in sub-optimal feeding as shown in the framework below.

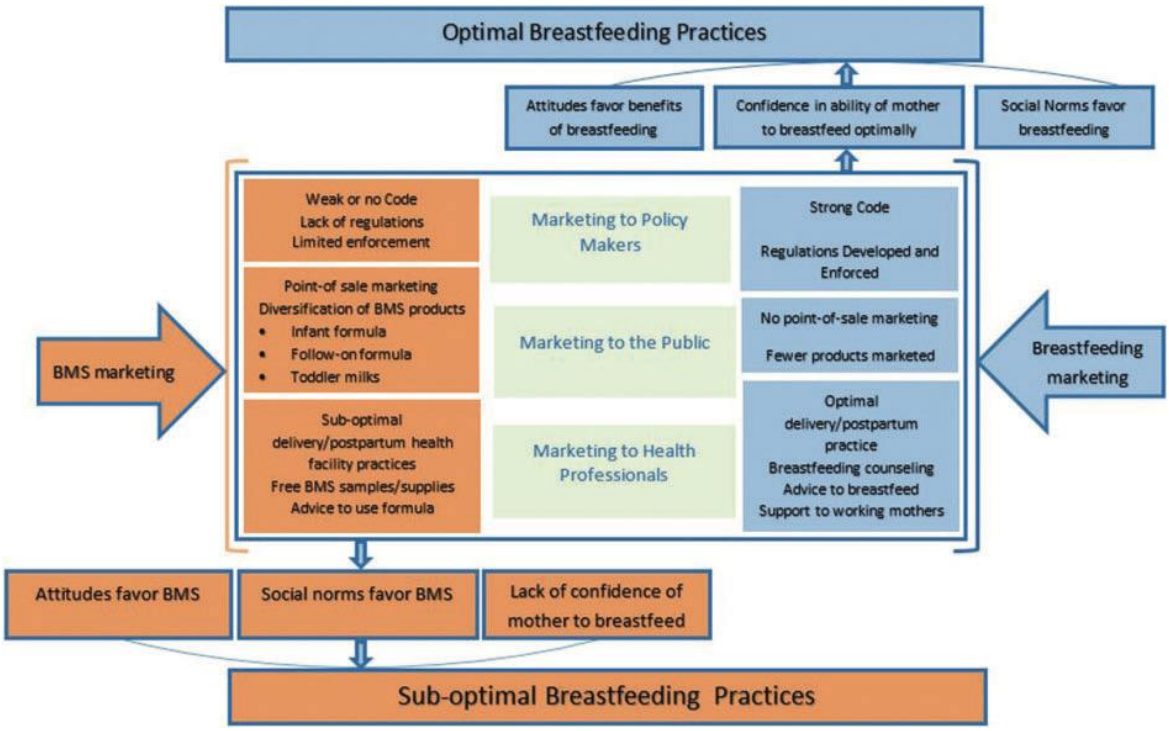


Figure 1. Conceptual framework for the effect of BMS marketing on breastfeeding practices (21).

This framework echoes various other studies which found that BMS marketing has an impact on the mother's self-efficacy to breastfeed (28, 29). Marketing also creates social norms that favour the use of BMS and this leads to sub-optimal breastfeeding (21).

In order to mitigate unnecessary and improper use of BMS, and as a way of promoting safe and adequate nutrition for infants and young children, the International Code of Marketing of Breastmilk Substitutes (the Code) was developed by the Twenty-Seventh World Health Assembly (WHA) in 1981 (14). Member countries subsequently developed their own guidelines to regulate the marketing of BMS in their countries. In South Africa, Regulations relating to foodstuffs for infants and young children, Regulation 991 (R991) were developed to enforce the Code (30) .According to R991, BMS manufacturers should not contact

members of the public to advertise their products, including on social media sites. Article five of the Code states that the advertising or promotion, and provision of BMS to women, mothers or members of their families directly or indirectly should not be done; advertising at point of sale or giving samples or promotion of devices with the intention to promote sales of BMS or bottle feeding and direct contact by marketing personnel is also prohibited (19). Despite the Code and R991, research has shown that companies producing BMS still market their products contradicting clauses of the regulations and have progressively moved to the use of the internet and various social media sites (31).

1.2 Literature review

The following review establishes what is known about the influence of advertising on behaviour, with a particular focus on BMS and social media in the context of regulations and building on what has already been presented. The review outline defines how framing and discourse are applied to influence consumer behaviour, and choices for infant feeding methods.

1.2.1 Breast Milk Substitutes marketing

In 2014, global sales from BMS totalled US$ 44.8 billion, (1) and by 2018, the sales were expected to have risen to US$ 60 billion, with an expectation of a 10% compound annual growth rate from 2019 to 2025 (32) . In many low- and middle – income countries (LMICs), including South Africa, the growth in sales of BMS exceeds 10% annually, compared to high income countries where it is stagnant (21). Companies producing BMS have practiced aggressive marketing of their products, leading to the increase in sales, thereby undermining the efforts towards the promotion and improvements of EBF (22).

1.2.2 Marketing of BMS through social media influencers.

South Africa has a population of about 57 million people, 31 million of which are internet users and 18 million are active social media users (33). The internet penetration in South Africa currently measures above half the total population, and access to the internet is done through the workplace, place of study, internet café, or at home (34). Mobile internet users in the country between the period of 2018 to 2020 increased from 44.96% to 57.3% of

the total population (35). Despite South Africa being ranked as having some of Africa's most expensive data, (36) once most South Africans experience the internet and the possibilities it presents, it becomes an important part of their lives (37). With such a wide usership in the country, social media platforms are used to provide quick information, to serve as a content hub for a variety of topics, to enable users to connect virtually with people of similar views and, recently, as a marketing hub for various products through the use of influencers (38). Social media influencers are people who have access to a large audience and therefore have the ability to persuade other people's decisions concerning a variety of issues (25). Instagram verifies influencers by virtue of their authenticity and reach, thereby giving them a "blue tick", which is also called a verification badge. Social media users follow the lives of the influencers, who, through using particular execution techniques, market various products and make it seem like they are living their natural lives rather than advertising (25).

Research has shown that companies producing BMS are increasingly using these influencers to promote and sell their products (26). Based on the tenets of influencer marketing, companies are using social media influencers as their brand ambassadors, some of whom have thousands and sometimes millions of followers on a plethora of social media platforms, including Instagram (25). Customers often perceive the messages relayed by the influencers to be reliable and are therefore compelled to follow the recommendations that they prescribe (25). Results from a study conducted in America showed that social media, through influencers, is used by BMS manufacturers and pharmaceutical companies for advertising directly to the consumer to promote products, create communities around the use of the products and to contribute to dialogues about infant feeding (39). There is limited research available on social media marketing of BMS in LMICs.

1.2.3 Framing and discourse to influence consumer uptake of BMS on social media

Some practices by companies may not be clear violations of the Code, but are of concern nonetheless because of their potential to influence infant feeding decisions by consumers (31). A study conducted on American social media sites showed that BMS companies, through allowing users to post comments and/or testimonials about their products, provided ample marketing of their products; this has an effect on the decision making process for the consumers by allowing users to repost, share or like the content, which provides greater exposure to other users, including those without formula feeding intentions (39). The same

study revealed that use of images idealizing formula feeding is also done on the social media platforms, where there is also creation of certain online communities around formula foods, which has been found to potentially perpetuate certain norms around breastfeeding, including that EBF is unachievable. Manufacturers have also used healthcare professionals to respond to user questions on breastfeeding (40). Although the Code prohibits the use of these professionals in the advertising of breastfeeding supplements, their presence on the social media platforms of the manufacturers draws traffic to the sites, exposing consumers to their marketing content.

1.2.4 Associations of crying, sleeping and posseting and BMS

Neonatal irritability has been found to cause discontinuation of breastfeeding and introduction of solids, linked to the perception that the infant is underfed (41). Several studies have also found that feeding methods affect the sleeping habit of an infant (31,32). Both these and other factors influence the mother's decision of which infant feeding method she will use. There is lack of information on the association of posseting and use of BMS.

1.2.5 Efforts to enforce regulations

The Network for Global Monitoring and Support for Implementation of the International Code of Marketing of Breast-milk Substitutes and subsequent relevant World Health Assembly Resolutions (NetCode) has developed a toolkit to reinforce the monitoring of the ICMBMS through providing protocols and tools for ongoing monitoring of adherence to the Code in member countries, and a periodic assessment protocol (43). These protocols provide practical guidance on imposing sanctions when the Code has been violated.

Specific to digital marketing of BMS, in February 2020, the Executive Board for the World Health Assembly requested the Director General to review current evidence and prepare a scope to report on the impact of digital marketing strategies for the promotion of BMS (44). From the WHA perspective, digital marketing of BMS is high on the agenda, and in November 2020, Agenda item 73/4 addendum 2 on maternal, infant and young child nutrition was published. This states that "the 73rd WHA requests that the Director-General: review current evidence and prepare a comprehensive report to understand the scope and impact of digital marketing strategies for the promotion of breast-milk substitutes" (44). The

publishing of this agenda highlights some of the efforts done towards monitoring of advertising of BMS in the digital platform.

Despite the regulations developed, efforts towards the promotion and improvements of EBF rates due to continued and aggressive marketing by companies producing BMS have been weakened (45). With the Code, even if a country has not incorporated the Code into legislation or policy, local and international manufacturers have to comply (14). There are also consequences for not complying with the other regulations. For example, penalties applicable for contravening Regulation 991(19) include a fine or imprisonment for a period not exceeding six months or both on first conviction with the penalty becoming stiffer for subsequent convictions. To date, however, there is no published evidence of penalties being applied in the South African context. This is attributed to a lack of capacity to enforce the Code in the country and a shortage of environmental health practitioners, who are responsible for monitoring adherence to regulations of the Foodstuffs, Cosmetics and Disinfectants Act (14). In some countries, for example Cambodia, steps have been taken towards monitoring of the Code. This was done through development of four checklists in May 2016, which are used to monitor compliance with the Code in the country (46). Activities done in this country include monitoring and evaluating the Code in four provinces and doing spot check visits for national and subnational levels (46).

1.3 Problem statement

South Africa has sub-optimal exclusive and extended breastfeeding rates (13). Despite the various codes and regulations developed by the WHO and other international organisations, as well as the local Regulation 991, marketing of BMS by companies is known to happen and this contributes to the suboptimal breastfeeding levels. Social media, through influencers, has developed into an important vehicle for disseminating infant feeding information (31), potentially contributing to parents' decision for infant feeding methods.

1.4 Justification

The WHO is currently conducting a study that focuses on the marketing of BMS in relation to crying, sleeping, and posseting in print media, with a hypothesis that linking products to the resolution to these common issues may be undermining breastfeeding. This is

also aligned with the WHA ‘s interest in digital marketing of BMS, with the publishing of Agenda item 73/4 addendum 2 on maternal, infant and young child nutrition, which requires that the Director General prepares a report that highlights the scope and marketing of BMS substitutes on the digital space. However, as parents shift to social media for their information, there is a need to explore that communication channel as well. Although studies of social media’s influence on infant feeding have been carried out elsewhere (23) there is a paucity of studies of the sort in South Africa. Instagram was selected as the platform of interest given its popularity as a social media platform in the country (47). In 2012, the platform had 100 000 users, but by 2013, the users increased by more than half a million, indicating the exponential growth of the platform’s usership in the country (38).This study adds to the scarce literature on how social media portrays infant feeding in the context of crying, posseting and sleeping. This includes how BMS companies market their products through influencers as well as how influencers may also be engaged to promote breastfeeding.

1.5 Research question

How are infant feeding methods, particularly BMS, being marketed on selected South African Instagram influencers’ handles in relation to crying, sleeping and posseting?

1.6 Aim

The study aimed to investigate how infant feeding options, particularly BMS, are presented by selected South African Instagram influencers to parents and caregivers with regards to crying, sleeping and posseting of infants during the first two years of life between 2018 and 2020.

1.7 Objectives

1. To describe the frequency of selected Instagram influencer posts on infant feeding methods overall and in relation to crying, sleeping and posseting during the first two years of life during the study period.
2. To describe how BMS are framed on Instagram in relation to crying, sleeping and posseting during the first two years of life during the study period.

3. To explore the conversations on infant feeding between the selected influencers and their followers on Instagram during the study period.

CHAPTER 2. MANUSCRIPT: INTERNATIONAL BREASTFEEDING JOURNAL *(6323 words)*

Manuscript Preamble

This chapter has been formatted according to the International Breastfeeding Journal author guidelines. A detailed description of the author guidelines and the link to the journal can be found in Appendix 3. However, the spelling (South African) and referencing (Vancouver) for the manuscript is aligned to Wits research report requirements and page numbering is aligned to the overall report. These will be updated prior to submission to the journal in accordance with the journal guidelines. Finally, the references that would usually be found at the end of this manuscript are located at the end of the overall report.

The infant feeding methods promoted by selected South African Instagram influencers in relation to crying and sleeping 2018-2020: A retrospective study

Sukoluhle Pilime (corresponding author), sppilime@gmail.com, University of the Witwatersrand, 27 St Andrews Road, Parktown

Sara Jewett Nieuwoudt, sara.nieuwoudt@wits.ac.za, School of Public Health, Health & Society Division, University of the Witwatersrand

Abstract [350]

Background

Globally, there has been a decline in the rates of breastfeeding. This has resulted in increased infant mortality due to infectious diseases and inappropriate feeding practices. The decline in breastfeeding rates is attributed to increased and aggressive marketing of breastmilk supplements by manufacturers, despite regulations prohibiting this. With the progressive use of social media, marketing has shifted from traditional methods to the use of influencers, who command a huge following on their social media accounts and influence the daily decisions of the thousands and sometimes millions of people who follow them. This study investigates the infant feeding methods promoted by influencers in relation to crying and sleeping and posseting and the responses from their followers.

Methods

This was a retrospective study, which used a mixed methods approach to analyse posts related to infant feeding methods that were made by seven South African Instagram influencers between the period of January 2018 to December 2020. Framework analysis was used to analyse qualitative data and quantitative data were analysed manually.

Results

From the 62 posts that were analysed, 27 were sponsored advertisements (some violating local regulations) and 35 posts promoted breastfeeding. The 18 333 follower comments and 918 299 likes in response to the posts were also analysed. The main themes from the research showed that influencers presented breastmilk substitutes as a solution for a child who cries a lot and has trouble sleeping. Breastmilk substitutes were also considered helpful for children

who are seemingly always hungry and were not satisfied with breastmilk alone. There were no discussions around posseting. The study also found that some influencers promoted breastfeeding on their Instagram pages. Unlike sponsored breastmilk substitute posts, breastfeeding posts were not sponsored. With a few exceptions, followers tended to support and reinforce the framing of influencers.

Conclusion

Stiffer regulations should be enforced against companies using influencers to promote their BMS products, with proactive monitoring of social media. Professionals giving advice contrary to the guidelines from the WHO should be reported according to Regulation 991 and made accountable. This study suggests that engagement with Instagram influencers to promote breastfeeding should be considered.

Keywords

Breast milk substitutes, Instagram influencers, Crying, Sleeping, Posseting, Infant feeding, South Africa

Background

There are many studies that highlight the importance of breastfeeding in maternal and child health. Some noted advantages include protection against diarrhoeal diseases, improvements in the lifelong health of the child, psychosocial and socio-economic benefits for both the mother and the child and significant reduction in infant morbidity and mortality (48). In South Africa, breastfeeding promotion is a national health priority; however, the country still has sub-optimal breastfeeding rates (12). For children under six months of age, the estimated Exclusive Breastfeeding (EBF) rates are between 8% to 32%, while for infants between 0-1 month it is estimated to be 44%, and this declines as the child gets older, between 4 -5 months to 24 % (8).

Problems with excessive crying, sleeping and posseting or "spitting up" are found in approximately 20% of children and have been known to inform the parental decisions for alternate infant feeding methods (15). Constant crying is also linked to inadequate milk production by the mother and in addition, an infant who seems continuously hungry motivates the initiation of alternate feeding methods (49). Companies that produce breastmilk substitutes (BMS) have been known to market their products in ways that present BMS as solutions for infants who struggle with the abovementioned problems. As a result of this, breastfeeding rates have significantly dropped due to the aggressive advertising tactics used by companies when marketing their products (21).

In response to an increase in marketing by BMS manufacturers and the subsequent increase in infant mortality rates, the International Code for the Marketing of Breastmilk Substitutes (ICMBMS) was developed by the World Health Assembly (WHA) in 1981, herein referred to as the Code. The Code has various articles and subsequent resolutions which regulate how governments, health systems and health care workers provide guidance

relating to Infant and Young Child Feeding (IYCF). The Code also monitors responsible marketing and labelling of BMS by manufacturers (50).

Drawing from the precepts of the Code, in 2012 South Africa developed its own Regulation 991(R991) to regulate IYCF practices (19). In terms of R991, there are restrictions placed on the labelling and marketing and promotion of infant follow up formulae, and powdered or liquid milk being represented as suitable for infants and young children (19). Complementary feeding bottles, feeding cups and teats are also implied by the Code and the local R991 (14). Specific to this study, the marketing of BMS and products as indicated above is prohibited for infants under six months of age and promotional practises of certain 'designated' products (for children under 36 months) contravenes the Code. Certain country-specific regulations have expanded the definition of BMS to include pacifiers, for example Vietnam (51), but this has not been the case for South Africa.

Despite the Code and country-specific regulations like R991, research has shown that companies are progressively using the internet and social media sites, as well as mobile applications to support and sell their BMS products (52). This is relevant, as in South Africa, almost 30 million out of an estimated 57 million people are active social media users (38). With this wide usership, companies are now marketing their products on various social media platforms through the use of social media influencers (24). Influencers are people who command a following on their social media profiles, categorised as mega influencers (more than one million followers), macro influencers (range between 40 000 and 1 million followers), micro influencers (between 1000 and 40 000 followers, and nano influencers (less than 1000 followers) on one social media platform (2). These individuals have developed credibility from their followers owing to the various content that they post (25).

Influencers are identified on the social media platforms through having a verification badge or a "blue tick" next to their usernames (24). Influencers can vary from celebrities, to people who are not necessarily celebrities but have acquired a huge following from the content that they post thereby gaining popularity on the social media platforms and making careers out of marketing for various companies on social media (25). The majority of influencers in South Africa are female (56.21%) and they are aged between 18 and 34 years old (4).

This study aimed to investigate how BMS were presented by South African Instagram influencers to parents and caregivers with regards to crying, sleeping and posseting of infants during the first two years of life. To support contextual comparison, we also looked at breastfeeding mentions by Instagram influencers during the same study period. Beyond frequency of mentions, we explored how infant feeding options were framed, particularly by influencers, but also by followers who engaged with these posts.

- Advertising of BMS and other related products should not be done to the public
- Free samples should not be given to mothers or families
- There should be no promotion of products
- There should be no free donations or subsidized supplies of BMS or related products in any part of the health care system
- Company paid personnel should not contact or advice mothers
- Health care workers should not be given gifts or personal samples
- Pictures of infants or other products or text idealizing artificial feeding should not be put on labels or products

Figure 2. Key elements of Regulation 991

Methods

In this study we used the digital ethnography approach (53), which involves collection of behavioural data of participants in their natural real life settings without the use of questionnaires, whereby what they say and what they do can be vastly different (54). In this study, the ethnographic approach was done online, and the researchers observed the interactions between the influencers and their followers and observed their natural behaviours without interference by the researchers. Instagram was selected as the social media platform of choice because in South Africa, about 6 million people are Instagram users and the majority of these users (54.2%) are female aged between 18-34 years old (55).

Study design

We used a retrospective study of Instagram posts and images using a mixed methods approach of both qualitative and quantitative methods to address the objectives.

Study setting

The study setting was the Instagram platform, with a focus on posts originating from selected South African Instagram influencers. Given the nature of social media, responses to posts may have originated from anywhere.

Study population and sampling strategy

The study population was all posts by South African Instagram influencers targeting mothers/parents and caregivers of infants that discussed infant feeding methods during the first six months of life during the study period of January 2018 - December 2020. This time frame was selected so that the most recent data at the time of writing up the research would be presented. As there is not a central repository that defines influencers to act as a sampling frame, identification of eligible influencers and then eligible posts was done as follows;

Step 1. South African Instagram Influencer Identification

The authors manually searched for the list of the top influencers who had children and posted content related to having babies in South Africa on the Google search engine using the Boolean search terms shown in Table 1.

Table 1. Boolean search terms

Boolean terms
Influencers AND South Africa
Celebrity AND Influencer AND Mom AND SA
Influencers AND Babies AND South Africa
Influencers AND Moms AND Babies AND South Africa

For each term, we reviewed the results from the first two pages and from these results and selected the URLs and associated Influencer names and handles to confirm that they were South African. Seven influencers that met inclusion criteria were identified at this stage.

After selecting the influencers to be analysed in the study, the researchers clicked the follow button on their profiles in order to access their posts as they were shared. While it is possible to access posts without having formally followed the influencers, as their profiles are publicly accessible, for the purposes of this study, the researcher followed the pages of the influencers to get real-time access (access as content is shared). This approach is similar to the methods of a study that was conducted in South Africa on the marketing done by companies producing BMS on social media but without using influencers (31) .

Step 2. Eligible post identification

We went on the Instagram handles of the selected influencers to search for posts that fit into the post eligibility criteria for inclusion in analysis. The eligibility criteria were as follows:

- The post and subsequent comments (for inclusion) should have been made between January 2018 to December 2020.
- The post must be publicly accessible
- Post must address infant and young child feeding practices

Step 3. Data extraction

The first author downloaded the eligible posts and their subsequent comments, number of likes, link, caption and username of the influencer and saved this in an Excel database. To download the videos, we copied the links of the video posts and pasted them on this link, https://www.onlinevideoconverter.com/, and then stored the downloaded videos in an Excel database for later analysis. To download the comments, we entered the URL from the posts on this link (https://spatulah.com/), and then pressed the scrape button, and all the comments were downloaded into a file and then saved in an Excel database.

Data processing and analysis

The final sample of collected data included 62 eligible South African Influencer posts from the seven influencers, comprising 61 images, one video and 18 333 comments (both influencers and their followers). These data were imported into NVivo12 for qualitative analysis. Table 2 summarises the dimensions of the posts that were coded for the manual quantitative analysis. One researcher did the entire coding, and for quality purposes, the other researcher did a few spot checks on how coding was done.

Table 2. Dimensions captured for quantitative analysis

Infant feeding	# of posts discussing infant feeding methods for infants by the influencers fitting the inclusion criteria
Crying	# of posts discussing BMS in relation to crying on the influencers' handles
Sleeping	# of posts discussing BMS in relation to sleeping on the influencers' handles

Posseting	# of posts discussing BMS in relation to posseting on the influencers' handles
Ads	# of adverts by companies producing BMS on the selected influencers' pages
Sources	who was quoted in the posts as giving advice on infant feeding, e.g. categories of health care professionals, mother to mother, BMS producing companies' representatives
Slant	Attitudes towards breastfeeding or BMS of both original posts and responses: Pro-BMS, Pro-breastfeeding, neutral
Violations	# of posts potentially violating R991 and the Code

For the qualitative aspect of the study, the analysis was conducted by viewing each image/video and analysing the subsequent captions and comments that followed each post. The authors conducted framing analysis (56) of how Influencers structured the delivery of information regarding infant feeding according to their own experiences and in other cases how this was structured according to what they were promoting. The first round of coding was done by going through the Influencer posts, captions and follower comments and categorizing them into themes. Framing analysis was done on the most prominent themes, as agreed upon by the researchers. Through the framing analysis, we explored how rhetoric, analogies and metaphors in common language were used to promote or undermine the use of BMS.

In order to enhance the credibility of the research, triangulation, through cross checking the posts and comments, analysis of data collected as well as auditing data for consistency was done by both authors. To enhance reliability of the study, one of the researchers

reviewed a sample of posts and checked that the way the other researcher was coding was consistent. Furthermore, the researchers discussed and revised any inconsistencies.

Results

South African Influencer reach

A total of 62 Instagram posts that were influencer initiated and met the inclusion criteria were identified for the period of January 2018 to December 2020. As shown in Table 3, the seven influencers included in the analysis had a total number of 6 790 000 followers, representing their total audience. In addition to the original posts, data were collected on the response and engagement of the followers through the number of likes and the number of comments each post received. Cumulatively, the 62 eligible posts received 918 299 likes and 18 333 comments, which were analysed over a three-month period.

Influencer (Instagram handle)	**Number of followers***	**Number of IF posts***	**Number of likes***	**Number of comments***
	n	**N**	**n**	**N**
1. Azwi Rambuda (Mrslitelu)	210 000	32	132 839	340
2. Mpoomy Ledwaba (Mpoomy_ledwaba)	370 000	4	181 923	1023
3. Nkateko Dinwiddy (takkies7)	347 000	20	498 743	15 685
4. Jessica Nkosi (jessicankosi)	2 600 000	1	11 700	137
5. Ntando Kunene (kunene_ntando)	361 000	1	n/a	24
6. Nandi Madida (nandi_madida)	2 700 000	1	92 700	730

7. Keke Mputhi (kekemputhi_official)	211 000	3	394	394
Totals	**6 790 000**	**62**	**924 396**	**18 333**
*The source for number of posts, followers, likes and comments was the Instagram Influencer handles, collected in December 2020				

Table 3: Follower engagement for each influencer's infant feeding posts

There were no likes on Ntando Kunene's video because she posted this on her stories, and posts made on this feature do not have a 'like' button. Therefore, it was not possible to establish how many people would potentially react to the video through likes.

Influencer infant feeding focus

Of the total eligible posts by influencers that were analysed, 43% were advertisements promoting products by companies producing BMS, specifically NUK, Phillips Avent and Ella's Kitchen), and 57% of the posts promoted breastfeeding. Of note, there was no explicit endorsement of formula feeding; however, indirect facilitators of formula were advertised by two of the three companies. Gadgets which are used to facilitate early mixed feeding (under six month of age), for example baby food makers and squeeze stations were also advertised. Of the posts promoting breastfeeding 43% were made during breastfeeding week which is usually held from the 1st to the 7th of August every year. As shown in Table 4, four of the influencers posted specifically about BMS, with some potential violations to Regulation 991 recorded. There were six influencers who referred to breastfeeding during the study period and three influencers referred to both BMS and breastfeeding. Among those influencers who posted both BMS and breastfeeding posts, no clear pattern could be established in terms of the number of times they posted the different infant feeding methods. For example, Azwi Rambuda had a total of 23 sponsored IF posts, and 9 non- sponsored breastfeeding posts,

while Nkateko Dinwiddy had the opposite, with 1 sponsored BMS post and 19 non-sponsored breastfeeding posts. This may indicate the general preference of the Influencer with regards to infant feeding methods.

Table 4. Types of posts by the influencers and potential Regulation 991violations

Influencer	Sponsored BMS Posts	Non-sponsored Breastfeeding posts	Potential violations of R991& ICMBMS		Total Infant Feeding posts	
	n	N	n	%	n	% of total posts
Azwi Rambuda	23	9	22	35.5	32	51.6
Mpoomy Ledwaba	2	2	2	3.2	4	6.5
Nkateko Dinwiddy	1	19	1	1.6	20	32.3
Jessica Nkosi	1	0	0	0.0	1	1.6
Ntando Kunene	0	1	0	0.0	1	1.6
Nandi Madida	0	1	0	0.0	1	1.6
Keke Mputhi	0	3	0	0.0	3	4.8
Total	**27**	**35**	**25**	**40.3**	**62**	**100**

Table 5: Post by specific type of BMS

BMS type	Number of posts
Pacifiers/bottles/teats/ gadgets for facilitating use of BMS	26
complementary food for infants less than six months ie porridges and other complementary foods	1
Baby formula	0

Table 5 indicates the specific type of BMS advertised by the Influencers. There were no posts advertising baby formula, and only one post was an advert for complementary food, directed at infants less than six months of age. Most of the advertising was done for gadgets that facilitate the use of BMS. This could be attributed to awareness by the manufacturers of the implications of illegal advertising but still finding ways to advertise that are seemingly less evident.

Influencer framing of BMS in relation to crying, sleeping or posseting

The methods and language used by influencers to describe infant feeding, particularly BMS, was of particular interest in terms of frames related to crying, sleeping and posseting. Table 5 highlights the breakdown of the posts in relation to crying, sleeping and posseting for those influencers who posted about BMS. Only two influencers linked BMS to these issues. Specifically, Azwi Rambuda discussed BMS to help infants with sleep and to address crying infants, while Jessica Nkosi referred to a pacifier as a solution for a "fussy baby". None of the influencers mentioned posseting or 'spitting up' in the context of BMS use. The other frames they discussed, for example bottles and teats mimicking the breast, are outlined in the qualitative analysis that follows.

Table 6. Frequency of BMS mentions in relation to crying, sleeping or posseting, by Influencer

Influencer	**BMS posts**	**Crying**	**Sleeping**	**Posseting**	**Other***
	N	N	n	n	N
Mpoomy Ledwaba	2	0	0	0	2
Azwi Rambuda	23	1	2	0	20
Jessica Nkosi	1	1	0	0	0

Nkateko Dinwiddy	1	0	0	0	1
Totals	**27**	**2**	**2**	**0**	**23**
*Other refers to BMS posts that were not related to crying, sleeping and posseting. These included marketing of BMS using other themes, for example difficulties faced by working mothers who are breastfeeding,					

1. *"Pacifiers soothe crying babies"*

BMS manufacturers used South African influencers to spread the narrative that pacifiers are a solution to a child who cries a lot or is fussy. In the instance highlighted below, an influencer posted an image of a Phillips Avent pacifier and framed it as the best alternative in the market that helps with a child who cries a lot.

> *The first few weeks of Sedi's arrival, boy, he'd cry. Pretty much every second, ok, maybe not second, you do catch my drift though. Had to come up with different ways to soothe him, and a Paci was it. Not just any Paci but the smooth Philips Avent Paci. He had it for approximately four months, and in those months he slept peacefully, the crying was reduced and mommy rested too.* (Azwi Rambuda)

Jessica Nkosi made the same claims about pacifiers soothing crying or 'fussy' babies, advertising a different brand of pacifiers called NUK.

2. *"Bottles and pacifiers mimic the breast"*

Another pattern in the framing of company-sponsored posts was the use of persuasive language to sway followers into using bottles or pacifiers, through portraying them as equal to the breast. In a Phillips Avent sponsored post, an influencer uploaded an image of a Phillips bottle with a caption describing how breastfeeding is difficult for a working mom, for the baby and the caregiver. The influencer described how the Phillips Avent bottle was the

ideal solution because it mimics the breast and is ideal for combination feeding. The post explained that by using the Phillips bottle, there was some comfort guaranteed to the mother and the baby would not be fussy during the day, in this instance marketing the product in relation to crying.

> *Being a young working mom who is still breastfeeding is quiet challenging..... Well, not just for you but also for your little one as well as the person taking care of your little you while you are at work. @philipsaventsa Natural bottle makes it all easy, for these bottles mimic the breast for easier combination feeding. That way you know your little heart is not fussy all day while you are at work. Oh and the very same containers you use to store your expressed milk can easily be turned into a Natural bottle. Easy feeding without pouring and re-pouring, ensuring hygiene for your little heart #breastfeeding #naturalbottles #youngmom #breastmilk #expressmilk #babyboy #babysedi #lesedi #avent #philipsavent #babies #bottles #naturallatch #anticolic #ultrasoft* (Azwi Rambuda)

This post promoted combination feeding as a solution for the "challenges" that come with breastfeeding. The fact that the influencer mentioned expressing breastmilk and used the hashtag #expressmilk as opposed to promoting infant formula explicitly does not detract from the frame claiming bottle equivalency to the breast.

Bottles were not the only product using the breast equivalence frame, as depicted in the image of an influencer advertising a NUK pacifier and the caption that followed the post



"My NUK package arrived while I was chilling outside today.... How cute are these soothers... they shaped like breasts while breastfeeding and you can microwave them to sterilize them. And I'm all about hygiene for my little star. I've become a bit OCD over the past few months. Thank you @nuk_southafrica ... these are the type of things that make me happy gnow... Any new mommies that have tried them??? #TwinkleTwinkleLittleStar"(Jessica Nkosi)

Image 1: NUK-sponsored pacifier advert and caption idealising its use

Instagram link for image: (https://www.instagram.com/p/BlsiW-VAKsu/)

From this image, advertising is done targeting parents and caregivers with children between 0-6 months old. A clear strategy to increase the reach of the promotion message by the influencer is noted through the use of the phrase "*Any new mommies that have tried them*?" in reference to the pacifier.

The parents and caregivers of children who cry a lot were influenced to use pacifiers and infant formula was subtly advertised through the marketing of bottles. There was no direct marketing of infant formula but marketing of gadgets and equipment that promote the use of BMS, in this case implying that the bottles and pacifiers were as good as the breast since they are "shaped like the breast".

In a different post, Mpoomy Ledwaba shared an image of herself breastfeeding, and highlighting the benefits of breastfeeding to her followers. However, this post was sponsored by NUK, a company which produces BMS. In her caption, she directed her followers to the NUK Instagram page and encouraged them to follow the page in order to stand a chance of winning a hamper by NUK. The caption is shown below:

> *Antibodies, vitamins, trace elements – and a lot of love: breast milk has everything your child needs for healthy development in the first months" The best breastfeeding advice I can give you is: do it your way and with love. I'm giving away a @nuk_southafricahamper to one amazing mama, all you have to do is follow @nuk_southafricaand share your unique breastfeeding journey and if you are pregnant, what you look forward to. (*Mpoomy Ledwaba)

This is an example of marketing of BMS that is not very apparent but may be considered a contravention, as NUK also makes bottle and teats and directing followers to their page may be regarded as promotional practise. In addition, the 'do it your way' mention is one often embraced by BMS companies as a way to underplay the hygiene and health risks of using their products. A more apparent advert of BMS for infants under six months is shown below:



AD We've reached another exciting milestone for Suri as she's now started her weaning journey. I remember having a lot of fun and making a lot of mess with Sana when she was weaning, but I remember finding it a little daunting too. Knowing when to start, what to start with and how to keep it fun! That's why I'm really happy to announce that I've partnered with @ellaskitchenuk to tell you about WEANURSURY – a brilliant new online hub filled with lots of helpful information, top tips from the experts, recipes, and so much more to support you on your weaning journey- Nkateko Dinwiddy

Image 2: Influencer marketing BMS for infants less than 6 months of age

Instagram link: (https://www.instagram.com/p/CHH-FPUFCn6/)

In this post, Nkateko Dinwiddy shared that she was weaning her child and had partnered with a BMS company called Ella's Kitchen. In the post, she directed her followers to the company's website to get more infant feeding advice. In this image, BMS is marketed targeting infants less than six months, which violates both the Code and R991. The food packets advertised in the image are marked "from 4 months", implying that the influencer is marketing to mothers or caregivers of infants under six months old. At the time the image was posted, the infant was less than six months old, therefore the image idealised feeding solids to infants under six months of age.

Influencer framing of breastfeeding in relation to crying, sleeping and posseting

Another aim of this study was to analyse the posts on breastfeeding and how this is framed by the influencers on Instagram. From the posts analysed, 57% were images of influencers breastfeeding their children and the subsequent captions accompanying the posts encouraged their followers to practice the same. Influencers who advocated for breastfeeding highlighted how breastfeeding was ideal to calm a crying baby and to aid with sleep patterns. Posseting was not mentioned in the context of breastfeeding. There was no evidence of sponsorship by companies or breastfeeding promotion organisations, e.g. GrowGreat or La Leche League, in these posts or associated hashtags.

During the annual breastfeeding week, the frequency of posts related to breastfeeding significantly increased among the influencers (43%). In this period, most posts were about influencers promoting breastfeeding and highlighting its benefits. In the example below, the influencer shared her experience with tandem breastfeeding (nursing two babies at the same time) and the benefits of exclusive breastfeeding. The image of the breastfeeding influencer and the hashtags that followed the post is shown below.



"One of my favorite things about motherhood is breastfeeding, so I decided I would breastfeed Nuri till she's 2 and even when I found out that I'm pregnant I was happy when my midwife told me it's safe to breastfeed

However, our breastfeeding had reduced to just mornings and evening, but the closer we are getting to the arrival of our new baby the clingier Nuri has gotten yes I plan on breastfeeding both but it seems missy is super attached now. Moms who've breastfed more than 1 baby did you experience this? Or just clinginess towards the end of your pregnancy #momtalk #breastfeedingmama#breastfeeding #breastfeedingmom #breastfeedingweek #postpartum #youngmom #breastfeedingbenefits #babies #moms #preggo #newmom #exclusivebreastmilk"-@mpoomyledwaba

Image 3: Influencer breastfeeding while pregnant

Instagram link (https://www.instagram.com/p/CAPxt9XDh3f/)

Another example of a post from an influencer encouraging her followers to breastfeed is showcased below



"I breastfeed openly whenever and wherever Suri needs. I've learned to block out the stares or the whispered comments from the non-approvers as I give my baby what she needs. My influence comes from my African upbringing where this approach to feeding babies was normalised by everyone around me. Don't let anyone make you feel bad for what's natural and normal. Enjoy your breastfeeding journey #normalizebreastfeeding#breastfeeding#breastfeedingmom"-Nkateko Dinwiddy

Image 4: Influencer breastfeeding publicly image and caption

Instagram link (https://www.instagram.com/p/CEmlVUfF3N8/)

There were other posts promoting breastfeeding by the influencers and they shared their own personal journeys with breastfeeding. Despite none of the breastfeeding posts being sponsored, we found that posts encouraging breastfeeding accounted for the majority of infant feeding posts that were shared by the selected influencers. There was little reference to breastfeeding in relation to crying, sleeping and posseting. Rather, some benefits to breastfeeding shared by the influencers were being nutritional, bonding between mother and child, and weight loss for the mother. The influencers who shared breastfeeding posts also highlighted some challenges that they encountered with breastfeeding. An example, as described in the image 3 caption, was clinginess of the infant towards weaning. Some other influencers shared how their support systems did not agree with the concept of exclusive breastfeeding and since they relied on them for taking care of their infants while they worked, their children were introduced to solids before turning six months old. Their followers

responded sharing their own personal experiences with infant feeding, which is highlighted in the following section.

Follower responses to Influencer frames

It is worth noting that from this study, more infant feeding posts promoted breastfeeding (57%) as compared to those that promoted the use of BMS products (43%). However, as reported earlier in Table 3, the posts encouraging the use of BMS got as many likes and comments as the posts that encouraged breastfeeding. The framing of the responses to the BMS and breastfeeding posts were analysed to explore the degree to which audiences' frames may align (or not) with Influencers. This is illustrated in Table 6.

Table 7: Follower's framing of comments relating to posts initiated by the influencers

Influencer	**Follower Comment Framing**						**Total**	
	Pro breastfeeding		**Pro-BMS**		**Neutral/Other**			
	N	**%**	**n**	**%**	**N**	**%**	**n**	**%**
Mpoomy Ledwaba*	534	52.2	229	22.4	260	25.4	**1023**	**5.6**
Azwi Rambuda*	100	29.4	150	44.1	190	55.9	**340**	**1.9**
Jessica Nkosi*	4	2.9	100	73.0	33	24.1	**137**	**0.8**
Nkatekho Dinwiddy*	10980	70.0	151	1.0	4554	29.0	**15685**	**85.6**
Nandi Madida	500	68.5	20	2.7	210	28.8	**730**	**4.0**
Keke Mputhi	235	59.6	5	1.3	154	39.1	**394**	**2.2**
Ntando Kunene	4	16.7	15	62.5	5	20.8	**24**	**0.1**
Total	**12357**		**670**		**5406**		**18333**	**100**

*Influencers who were sponsored by BMS companies

Influencer vs alternative frames in follower responses

There were examples of influencer posts and subsequent conversations outweighing a follower's immediate social support system around the use of BMS, pacifiers in particular. As noted below, a follower mentioned that her grandmother was against the use of pacifiers and had advised she throw her's away. However, she was hardly sleeping at night and was reconsidering her decision following the conversations around the issue from the influencer's post. Responding to Jessica Nkosi's pacifier post, a follower had the following sentiments to share

> *Wow I had to throw the pacifiers in the bin because my son's paternal granny is so against them and I'm also a neat freak so wouldn't give my son something dirty. Now at night I hardly sleep cos he eats every 2 hours.*

In this case the mother's sleep took precedence over the infant feeding method that was ideal for the baby. Responses of the followers from the described case and other similar posts indicated that the consensus among the influencers and their followers was that giving babies pacifiers was an effective way to calm a crying baby (and catch up on one's own sleep).

In a video post, Ntando Kunene probed the opinions of her followers after her mother had suggested giving her four-month-old son solids. She was sceptical of her mother's advice since she knew guidelines advised initiation of solids after six months of age. Responding to this, a follower mentioned how she had started her child on solids when she was hardly a month old. She gave the logic that the child cried a lot and after initiating solids, the crying

decreased. From this comment, other people giving their opinions on the conversation highlighted how they found it helpful to introduce solids to children that had not even reached a month to deal with the excessive crying.

... mine seems a bit crazy but my daughter started solids when she was hardly a month old , because she used to cry a lot even after the bottle so my mom suggested I start the solids. I felt it was waaaaayyy too soon but hey it worked

Another response to the video was:

You waited this long? My grandmother waits for a month and then she starts feeding solids. These kids cry so much when they are hungry and sometimes milk alone doesn't do justice.

Some "experienced" mothers within the comments sections also opined that the recommended six months to introduce solids was unachievable, and that the mother would have lost their mind because of an excessively crying baby.

I'm a mother of three....Start as soon as they start crying from hunger, you would know, 2 months and above but the books are shy to tell the truth ..... they'll be like 6 months ... at which point you would be at a mental institution

A notable finding from this and other influencer-initiated posts was that influencers seldom responded to the questions posed by the followers. In the case of the video, Ntando Kunene did not comment or give feedback to her followers pertaining to the conversation that

she had started. Due to this, it is unclear whether her inclination from the responses of her followers was more towards breastfeeding or not. This was not a sponsored post and no BMS product was advertised. However, there was enough conversation around the topic to sway the decisions that the followers who had access to the post would make.

Health frames by professionals on influencers' posts

Despite regulations from the Code against it, some health professionals used the influencers' platforms to give infant feeding advice. One such example is from a nurse who recommended the need for a baby to have a pacifier. In the comment, the nurse pointed out that some babies need pacifiers to soothe them even when not hungry, and that the pacifier helps with a good sleep at night. The comment read,

> *I am a nurse, trust me I thought the same way before the baby arrived but reading more my anxieties were alleviated, some babies NEEEDDD a pacifier as they always want something to suck on even when they are not hungry, and it helps them sleep well at night not to mention prevention of sudden infant death.*

In this instance, a pacifier was portrayed as a preventative method against infant death by a health professional.

Despite the popularity of pacifiers among the influencers who posted them and their followers, some other responses to the pacifier posts were against their use, citing them as unsanitary. A follower's response to a pacifier advert by an influencer highlighted how she was not using one because of the risk they pose on exposing children to diarrheal infections.

Another follower responded that on doctor's advice, she was not going to use a soother because she believed they are unhealthy.

In spite of comments like these, the general slant in the responses were more positive towards what the influencers suggested, with some followers thanking the influencers for the suggestions on which pacifier to buy and how the pacifier helped soothe their own babies as seen in this quote: *"Just gave birth two weeks back and I'm planning to get one. Thank you @mrslitelu"*

Frames related to sleep and hunger

Belief that a child who is not well fed tends to sleep less and therefore the child's diet needs to be complemented with BMS was popular among the followers. A follower mentioned that she started her child on solids at three months old, against the advice of health professionals; however it had turned out "great" for her; *"Started at 3 months cos she was just not getting full with the milk only… It turned out great though nurses discourage it."*

Although we were interested in whether BMS companies are taking advantage of parental confusion over posseting/spitting up to market their products, neither influencers nor followers mentioned posseting or 'spitting up' in the posts that were reviewed for this study.

Discussion of findings

Extent and prominence of influencer posts' coverage

Studies have shown that young mothers rely on social media, Instagram in particular for advice, support and general information about breastfeeding and infant feeding methods (57). Through Instagram influencers, content that creates discursive communities on various topics and themes related to breastfeeding is shared, and there is a high degree of interaction between the followers and the influencers (58). The number of followers that an influencer has translates to the potential audience for these discussions and reach is established by the number of likes and comments a post receives (59).

From this study, the total number of followers of the 7 influencers that were analysed was 6 790 000. This reflects reach, the number of people who may have been directly exposed to the influencer infant feeding posts. As a 'discursive community' almost one million people directly engaged with the selected influencers through likes and 18 333 comments were made on the 62 infant feeding posts. As noted in the findings though, few influencers responded to follower comments, which suggests that the depth of discussion or discourse was relatively superficial. In this study, three companies were identified as sponsoring Influencers to market BMS. These were Ella's Kitchen, Phillips Avent and Nuk. Ella's Kitchen sponsored Nkateko Dinwiddy to post BMS in the form of complementary foods for infants aged four months old. It is worth noting that the influencer involved is based in the UK, however, her followers are mainly South African, and through her post, they could access the website for Ella's Kitchen and buy the products online. In the UK, regulations relating to the marketing of BMS may vary from those of South Africa; therefore this could indicate the tactics that manufacturers use to market their products, in the process violating regulations. The other companies - (NUK and Phillips Avent - did not explicitly market baby formula or solids, but rather marketed gadgets facilitating the use of BMS. This indicates

awareness of regulations; however, companies still find ways to manoeuvre and market their products.

BMS manufacturers take advantage of the wide audience reach the influencers have to market their products (21). The South African influencers sponsored by BMS companies had a reach of 3 518 000 followers in this study. Other studies have found that BMS companies normally spend 10-15% of their gross profits to market their products in low and middle income countries (21). However, with the advent of social media influencers, the reasonable assumption is that they spend less per post for the large audience that is commanded by the influencers when compared to traditional marketing methods, e.g. print advertisements. This could follow that fewer resources are used in the marketing of BMS to target a significantly wider audience, making it cost effective (18,24).

Previous research has shown that Instagram has both negative and positive influences on its users in general (60). Due to the large potential of social media influencers to influence behaviour, increased monitoring of social media marketing should be done to regulate the activities of the BMS manufacturers. Research has however shown that social media pages with a focus on breastfeeding can improve breastfeeding intentions, enhance knowledge pertaining to breastfeeding and can provide supportive communities among breastfeeding mothers (60). These results are congruent with results from this study which showed follower appreciation and appreciation of influencer breastfeeding posts.

Violations of the ICMBMS and R991

The ICMBMS together with the local R991 prohibit the marketing of BMS for use as a total or partial replacement of breast milk (14). A provision in the SA legislation is that employees of BMS manufacturers cannot contact members of the public to market their products, including via "internet sites", which include social media platforms (31). This study revealed that several provisions of the Code were violated through the manufacturer-sponsored posts that were shared by the influencers. Four influencers directly advertised BMS products to their followers, portraying them to be best decisions that parents can make for their children in terms of assisting with problems of crying and sleeping. Even if some of the products are not covered in R991, e.g. pacifiers, the companies also produce BMS that are covered in the regulation and use influencers to draw followers to their websites.

In reference to a child who cries a lot, the influencers with posts addressing this prescribed the use of pacifiers. Within these posts, their followers reinforced that this was effective in calming a crying baby, providing additional marketing support to the BMS companies. In the case of this research, some influencers posted adverts for pacifiers specifically designed for infants from birth to six months old. Despite this not violating R991and the Code, this contravenes the UNICEF and WHO Guidelines for the Compliance for Advertising in Baby Friendly Healthcare facilities, which prohibits marketing pacifiers and nipple shields and regards the marketing of these as unacceptable(62).

While physiological factors influence a woman's decision to breastfeed, societal factors have been observed to play a bigger role on a woman's infant feeding decisions (60). Recent studies have shown that breastfeeding mothers use social media for social support, seeking

advice and as a source of information (21, 22). Instagram influencers are known to create information sharing societies with their followers and BMS manufacturers use this to their advantage when marketing their products through paying influencers to endorse their brands (25). The discursive communities created on social media through interactions of influencers and followers in the comments section have the potential of reinforcing social norms that undermine breastfeeding on posts that promote the use of BMS or related products. For example, seeing an influencer using a pacifier to help her baby sleep, and giving testimonials of how this has made her life easier, as in the post by Jessica Nkosi, would encourage her followers to do the same; they might also visit the company website, which also markets infant formula. This arguably contravenes provision 7 of the Regulation 991, stating that no person shall undertake or participate in any promotional practices in respect of BMS (19).

The use of framing techniques to influence behaviour

Framing theory suggests that the way something is presented to an audience influences the choices that the audience makes pertaining to how they process the information, and can be viewed as a form of agenda setting (63). From the posts and comments that were analysed for this study, it is clear that companies producing BMS were marketing their products through framing techniques used by influencers on social media, thereby increasing social acceptance and desirability to use them. These techniques include metaphors, catch-phrases, stories and artefacts.

According to the framing theory, metaphors are used when an idea or concept is compared to something else in order to create desirability (64). An example of the use of metaphors from this study was when pacifiers and teats were compared to the breast.

Specifically, on several posts, two influencers mentioned how the NUK pacifier and the Phillips Avent teat mimic the breast and were suitable for infants from as young as 0-6 months in the case of the pacifier. To a follower, this can be taken to mean the teats are as good as the breast through the language that the influencers used to advertise them therefore are an ideal replacement for breastfeeding. A study on whether breastfeeding babies should be given pacifiers found that early introduction of pacifiers may lead to "nipple confusion" and may lead to incorrect latching, which undermine breastfeeding (65).

Framing theory also suggests that the use of catch-phrases make a message more memorable and relatable (64). In the language of social media, catch-phrases are sometimes presented in the form of hashtags, and they make content easier to find (66). All the posts that were analysed for this study contained at least one hashtag to improve the reach of the posts. Examples of when hashtags were used in the promotion of breastfeeding included #breastfeeding, #normalizebreastfeeding. However, in the adverts, BMS manufacturer companies were hash-tagged to increase visibility of the posts. Examples include #PhillipsAvent #naturalbottles, #naturallatch. The use of hashtags and the catch-phrases from within the hashtags increases the volumes on the posts and using company hashtags could bring Instagram followers to the main company websites, where other BMS products are marketed. Such catch-phrases, when used to market BMS, can have detrimental effects on the efforts to promote ideal infant feeding practises (66).

Through story-telling, a topic is framed in a vivid and memorable way to the effect that an audience can be drawn to it (64). Influencer posts analysed in this study indicated that influencers use this technique through captioning their posts with a personal experience using BMS products on sponsored posts or breastfeeding on the non-sponsored posts. According to

the theory, depending on how well the story is told through the captions or through images and videos, the targeted audience is likely to follow the recommendations from the posts (60). The visuals of influencers breastfeeding and the support they receive while doing so drew follower attention and may have aided them in the practise.

In this study, there was a high level of engagement on the posts promoting breastfeeding and followers were encouraged to practise the same. Despite the common belief that breastfeeding is practised by people of low socio-economic status (13), when the followers saw people they look up to breastfeeding, they expressed motivation to copy the behaviour. The impact of marketing could therefore be beneficial to promote infant feeding according to regulations and guidelines by health authorities.

Implications of violations

Even though the data analysed in this study did not show direct advertisement of infant formula or porridges, there was clear use of calculated marketing techniques by companies which did not make the marketing apparent. This was done through marketing gadgets used to facilitate administration of apparent BMS, like feeding bottles. While this may indicate the effectiveness of the Regulation 991 in reducing marketing of infant formula, conclusions can be made that companies producing BMS are aware of the regulations of the Code, but still find ways of advertising their products.

The use of BMS company hashtags was a subtle way of directing followers to products that are otherwise restricted from being advertised. This finding resonates other literature from a study looking at marketing of BMS in South Africa which made the same conclusions (31).

According to both the Code and R991, the penalties that can be imposed for violating regulations include fining or imprisonment or both to companies found in violation (19). However, to date there hasn't been any published information to that effect despite the violations by the manufacturers.

Limitations of study

While the posts analysed received almost a million likes and about eighteen thousand comments, reflecting reach, the sample size for the influencers analysed was relatively small (a total of 7). We might have introduced bias through the influencer selection methods used, as there is no central repository of Instagram influencers available. Restricting the sample to South African influencers does not reflect non-South African influencers who South Africans may be following, meaning that this study likely underestimates how BMS companies may be using influencers. With the use of Instagram, the influencer who makes a post is at liberty to delete a post after they have made it such that some posts may have been deleted after engagement with the public and potential influence has already been made. This was the case with the one video that was analysed as a part of this study. We had however downloaded it and its subsequent comments before it was deleted. However, this feature on Instagram may influence replicability of this type of study. The use of Instagram as compared to Facebook may also be another limitation of this study, as Facebook has more users than Instagram. In addition, the researchers did not go through a formal intercoder reliability check on the quantitative coding.

Conclusion

From this study, we can conclude that influencers play a crucial role in the infant feeding methods adopted by their followers. This conclusion is based on the finding that on the posts

that encouraged breastfeeding (majority of posts in this study), the followers tended to agree with the recommendations of the influencers. The same goes for the posts where the influencers advertised BMS, where the followers commented highlighting how they would adopt the recommendations of the influencers. This reinforces the conceptual framework in Figure 1, suggesting that when there is limited enforcement of regulations and guidelines, as is the case with South Africa's R991, public marketing of BMS may result in creation of attitudes and social norms that favour BMS (40). The unavailability of marketing of baby formula by the Influencers selected for this study may indicate that there is knowledge of the regulation against marketing of BMS by manufacturers, but they still find a way of marketing other products that are linked to BMS and which undermine breastfeeding.

Recommendations

Instagram as a channel of influence for infant feeding should not be overlooked. Specifically, BMS marketing on social media is cause for concern that requires closer monitoring and regulation. However, the channel of Instagram itself should not be disregarded. Rather, as the world is moving towards a more digital era, it is recommended that public health communication strategies shift focus from the traditional print messaging to social media communication; there is need to explore using influencers as a medium for information sharing. Using platforms like Instagram, where the responses from the audience can be accessed, can also be an advantage because misconceptions can be addressed and corrected given the intractability of the platforms. In South Africa, cumulatively, eight million people have access to all social media platforms (47), therefore to target social media users who are in their millions, conveying health messages through social media is recommended. There should be a section in the national legislation that deals specifically

with the marketing of BMS on social media. In addition to improvement of monitoring of marketing, BMS manufacturers should take responsibility for their marketing practises on social media platforms, such as Instagram, as they have a responsibility to comply with national legislation in countries. Influencers must be educated on doing research before endorsing brands, especially when it comes to health and specifically infant health. It is also recommended that more popular social media platforms like Facebook and WhatsApp be explored for potential violations of the Code and R991.

Summary of Recommendations

- Update South Africa's local policy/regulation to include pacifiers as BMS
- Establish robust and sustainable monitoring mechanisms and enforcement of national laws and regulations
- Invest in awareness creation programs for governments on the misuse of social media by BMS manufacturers
- Use Instagram as a platform and Influencers as messengers to encourage breastfeeding
- Conduct additional research to highlight the impact influencers have on infant feeding decisions of their followers, including other popular platforms such as WhatsApp and Facebook
- Include a section in the national legislation dealing specifically with marketing on social media

References

These can be found at the end of this report but would be located here for the actual manuscript.

Declarations

Ethics approval and consent to participate

No human participants were involved in the study. This study was conducted online through accessing data from publicly accessible domains. The ethics for study was waived by the University of the Witwatersrand ethics board (Appendix 2).

Consent for publication

Further advice from the journal on whether consent to publish the images of the influencers will be sought prior to publication.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that there are no competing interests.

Funding

This research was not funded.

Authors' contributions

SP contributed to the collection of data. SP and SJ both analysed and interpreted the data that was used in the study. SP led the write up of the manuscript. SJ reviewed, provided editing support and approved the final manuscript.

Author's information

738 SP is a postgraduate student at the University of the Witwatersrand in the School of
739 Public Health in the field of Social and Behaviour Change Communication (SBCC). SJ is a
740 senior lecturer and coordinator of SP's SBCC field of study at the University of the
741 Witwatersrand, School of Public Health. She supervised SP's master's research.
742
743

CHAPTER 4. EXTENDED RESULTS

4.1 Introduction

This chapter presents an additional table that explores the frequency with which breastfeeding posts mentioned sleeping, crying or posseting, which was one element of Objective 1 not covered in the manuscript. This chapter also includes two additional themes that emerged during analysis of follower responses, which were raised as potential reasons for introducing solids prior to six months. These include the perception of milk insufficiency and gender differences in early nutritional needs.

4.2 Results

Breastfeeding posts and sleeping, crying or posseting

The frequency with which breastfeeding posts mentioned sleeping, crying or posseting, was one element of Objective 1 that was not presented in the manuscript (see Chapter 2). As shown in Table 7, there was no reference to crying and posseting, and very minimal mention of crying in relation to breastfeeding by the influencers. Rather, an analysis of captions found that influencers discussed breastfeeding primarily to create awareness of its benefits. This was mostly done during Breastfeeding Week. They also provided emotional support to their followers. For example, Nkateko Dinwiddy encouraged her followers to practise breastfeeding beyond six months and on-demand regardless of external influence to stop breastfeeding.

Table 8: Frequency of breastfeeding mentions in relation to crying, sleeping or posseting, by Influencer

Influencer	**Breastfeeding posts**	**Crying**	**Sleeping**	**Posseting**	**Other**
	n	N	n	n	n
Mpoomy Ledwaba	2	0	0	0	2
Azwi Rambuda	9	0	2	0	7
Nkateko Dinwiddy	19	0	2	0	17
Nandi Madida	1	0	0	0	1
Keke Mputhi	3	0	0	0	3
Ntando Kunene	1	0	0	0	1
Totals	**35**	**0**	**4**	**0**	**31**

The two additional themes that emerged during framing analysis were about milk insufficiency as well as gender differences in nutritional needs.

Insufficient milk production

From the comments section of an influencer enquiring about her followers' infant feeding methods, some mothers replied that their bodies did not produce enough milk and this caused their babies to not sleep at night. This informed their decision to introduce solids and formula even when the babies were less than six months of age. A direct quotation from a follower responding to Ntando Kunene's post is *"I gave my little one formula with a scoop of purity rice at 5 days. I couldn't breastfeed because my body wasn't producing any milk and she kept crying at night."*

Another follower commented that she was told that she did not have enough milk, therefore she had to make a bottle to satisfy her child and they could both sleep better: "*With my first child I was told I didn't have enough milk so every time I breast fed I had to make a bottle on the side*."

Gender differences in early nutritional needs

Another opinion on the influencer-initiated conversations around infant feeding was that parents of boys needed to introduce solids earlier than six months of age because boys generally eat more than girls and therefore would not get satisfied with breast milk alone: "*With my first one I started at 6 months and she would be full but with my son it was a different case, we had solids at 4 months, boys eat more"*

CHAPTER 5. OVERALL DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the key findings from the study. It also includes conclusions and recommendations, with a focus on policy/regulation, programme implications and further research opportunities.

5.1.1 Discussion of key findings

The overall aim of this study was to investigate how infant feeding options, particularly BMS, are presented by South African Instagram influencers to parents and caregivers in relation to crying, sleeping and posseting of infants during the first two years of life.

With regards to this aim, a key finding from the study was that there was reference to BMS as a solution for crying and sleeping by the influencers, however, there was no mention of BMS in the context of posseting. Previous research found that BMS companies use health claims as a tool to promote their products, through asserting that their products prompt an infant's ability to sleep well and calms fussy babies (40).

In this study, we found that despite international regulations against marketing of BMS, marketing by manufacturers does exists in the social media space and more specifically, on Instagram through South African influencers. This was also found in a similar study that was conducted in South Africa, but with a focus on the social media pages of the companies rather than on influencers (32). Another study also found that BMS companies, for example Danone, are taking advantage of the Covid-19 pandemic to contact mothers through the use of social media in India (40).

In the South African context, the marketing is subtle, and this may be attributed to the existence of R991, which regulates marketing in the local context. This implies that companies have devised ways of marketing their products against R991and this includes the use of the internet, and specifically social media sites such as Instagram, where monitoring is still minimal. The use of influencers as a marketing technique on social media is on the rise (25), and this is beneficial for

BMS companies, because, based on the tenets of influencer marketing, the influencers portray the use of BMS as part of their normal everyday life and influence people who look up to them to do the same.

Our findings also showed that from the seven influencers whose posts were analysed, five of them made posts related to the promotion of breastfeeding, which made 57% of the total posts that were analysed. Of the breastfeeding posts, 43% were made during breastfeeding week, during which there is increased awareness towards the benefits of breastfeeding on all media (67). From analysing the comments, we found that discursive communities around breastfeeding are present on Instagram, where mothers highly engage with influencer posts and with each other to share personal experiences with breastfeeding. Another study has also found similar findings (39).

The first objective of the study was to describe how BMS are framed on Instagram in relation to crying, sleeping and posseting during the first two years of life during the study period. In relation to marketing BMS, a tactic used by Azwi Rambuda to frame BMS was presenting them as alternatives for working mothers. This was done through portrayal of breastfeeding for a working mother as being a "challenge". As a solution, the influencer advised her followers to use the Philips Avent bottle, since it is "shaped like the breast". This analogy was also made by Jessica Nkosi in reference to a pacifier. The use of analogies and metaphors in marketing has been found as a tactic to attract the attention of the consumer, to evoke imagery and to influence consumer attitudes and beliefs (68). In this case, the idea of mimicry to the breast was used to draw the consumers to the products advertised. This was a prominent tactic used by the BMS manufacturers through influencers to market BMS in this study.

In the example where apparent violation of both the Code and R991 was done, Nkateko Dinwiddy advertised solids for infants younger than six months from a company called Ella's Kitchen and directed her followers to the company's website. In the image, the influencer is seen feeding her baby with Ella's Kitchen BMS, in this instance using influencer marketing techniques, which rely on marketing through portrayal as personal practise (59). This technique was used by all four of the influencers who were sponsored by the various manufacturers to market their products. In the example from Nkateko Dinwiddy, the BMS was advertised as ideal for weaning for children less than six months of age. The WHO however guides that EBF should be done for six months and continued breastfeeding should be done for two years or beyond (7). By directing her followers to

the Ella's Kitchen's page, the influencer went against regulations from the Code against promotional practise (69).

BMS companies may also align themselves to breastfeeding posts, drawing attention to their brand in a less obvious way than direct marketing (40). This method was used by a company owned by Nestlé in Singapore, where the company invested in a full-page advert highlighting the benefits of breastfeeding in a mother's magazine, however, on the next page, a formula advert by the same company was made (31). This method appeared to align the company to messaging about the superiority of breastfeeding, but was also promoting their own BMS products (40). The same technique was used by Mpoomy Ledwaba in this study. She posted an image of herself breastfeeding, and made a caption highlighting the benefits of breastfeeding, but at the end of her post's caption, she directed her followers to the NUK page and mentioned that she was giving away a NUK hamper to her lucky followers, going against promotional practise. This post was made during Breastfeeding Week, possibly to align the company to breastfeeding as well.

Another objective of the study was to describe the frequency of Instagram influencer posts on infant feeding methods overall and in relation to crying, sleeping and posseting during the first two years of life in the study period. During the 2018 – 2020 period, a total of 62 infant feeding posts were made by the seven influencers who were analysed for the study. Despite the number of influencers being relatively small (seven), the reach of each post was high, with the posts receiving 6 790 000 likes and 18 333 comments cumulatively. The reach that influencers have may represent the potential for an increase in mothers and caregivers buying BMS and exposing their children to the negative effects of early introduction to solids (before six months) and sub-optimal feeding methods which ultimately leads to increases in infant mortality and morbidity (21).

Finally, the study sought to explore the conversations on infant feeding between the influencers and their followers. We found that from the posts that promoted breastfeeding, the followers responded that they would breastfeed their own children as encouraged by the influencers. However, on the posts in which influencers were marketing BMS, the followers were also in agreement with the opinions of the influencers. This can be an indication of the level of influence carried by the influencers on the opinions of their followers. A study found that BMS manufacturers create web-based communities and use these as a vehicle to promote their products to mothers and caregivers of infants and young children (37). This study revealed the same, that this is also done by the BMS

manufacturers through the use of influencers. Social media creates the ability of developing relationships based on perceived trust between the influencers and their followers, which cannot be achieved by traditional media (52). When analysing the conversations between the influencers and their followers, we found that there appeared to be a degree of trust in the suggestions that were made by the influencers as followers attested that they would consider the infant feeding methods suggested by the influencers.

5.1.2 Conclusions

With the aim of the study being to investigate how infant feeding methods were presented by South African Instagram Influencers to parents and caregivers with regards to crying, sleeping and posseting, we can conclude that influencers play an active role in the infant feeding decisions of their followers, though not only in relation to the three contexts as hypothesised. Specifically, on the posts that encouraged breastfeeding, the responses from the followers indicated how they were willing to practise this, while on the posts that encouraged the use of BMS, the followers commented on how they would try the various BMS on their infants as well. This reinforces the conceptual framework in Figure 1. The framework suggests that when there is limited enforcement of regulations and guidelines, as is the case with South Africa's R991, public marketing of BMS may result in creation of attitudes and social norms that favour BMS (40). These may in turn affect the self-efficacy of the mother to breastfeed. Specifically, BMS-sponsored posts were used to address the infant crying and sleeping concerns of breastfeeding mothers. There is however a paucity of literature addressing marketing by BMS manufacturers with regards to this.

5.2 Recommendations

There are several recommendations that emanate from this study, broadly divided into policy/regulation recommendations, those related to programming and finally, further research needs. This report concludes by presenting the recommendations in that order.

Update South Africa's local policy/regulation to include pacifiers as BMS

While pacifiers have been found to reduce the incidence of SIDS (70), there is need to consider revising R991 and even the Code to include them as BMS due to the health consequences resulting from their unhygienic use as well as their role in undermining breastfeeding, particularly if

introduced early (65). Findings from other studies have also suggested that infants' exposure to pacifiers leads to early cessation of breastfeeding between the period of three to six months, and cessation of all breastfeeding by 12 months (49). Other studies have shown that diarrhoea, which accounts for most infant deaths, is caused by improper cleaning of teats, and this can be extended to pacifiers (9). Other countries such as Vietnam have already modified their local regulations to include pacifiers as BMS, which agrees with UNICEF guidelines which also lists pacifiers as BMS (51).

Establish robust and sustainable monitoring mechanisms and enforcement of national laws and regulations.

The marketing of BMS on social media as evidenced from this study and another study that was conducted in South Africa (31) reveal that there is minimal monitoring of BMS producers' activities on social media. This must therefore be monitored, and enforcement mechanisms put in place to mitigate violations. Specific to social media and in the context of this study, clarification of violations from influencers promoting BMS should be explored, with special attention paid to who will be reprimanded for sponsored and non-sponsored posts made by influencers promoting the use of BMS. There should also be clarifications around whether an influencer posting a hashtag redirecting people to a site that is in violation of R991 or the Code. Considerations should also be made whether an influencer is responsible for what followers post in response to an initial post. For example, in the study a health worker was quoted giving infant feeding advice on an influencer's post.

The conclusion from this is that there should be constant monitoring of infant feeding posts made by influencers because of the impact their posts have on their followers. Even though studies to monitor the online activities of BMS manufacturers have been conducted in other countries, for example Mexico and USA, evidence of enforcement of regulations and laws for internet violations is unavailable. The WHO has developed the The NetCode toolkit for ongoing monitoring and periodic assessment of the Code (71), and this has been used in ten countries, excluding South Africa, which has not adopted its use yet (72). It is imperative that South Africa accelerates the use of the toolkit to monitor violations.

Develop awareness creation programs for governments on the misuse of social media by BMS manufacturers

There is need for awareness creation to policy makers and government leadership to highlight the level of violations happening within the social media context. This can be done through creation of breastfeeding committees, mandated with the task of systematic monitoring, updating regulations, investigating violations and enforcing punitive measures for these violations on all media, and especially on social media. Larger-scale awareness campaigns should also be introduced to the breastfeeding women, to capacitate them to identify Code violations and report them, since they are the targets for the adverts. Companies producing BMS should be excluded from nutrition and health education and promotion programs. They should also not be associated with any interventions supporting breastfeeding to avoid association of healthy living with their brands. This was revealed as a tactic used by BMS manufacturers market their products, in the process undermining breastfeeding (40).

Use Instagram as a platform and Influencers as messengers to encourage breastfeeding

Results from this study revealed that there is a significant number of posts encouraging breastfeeding that are shared by the influencers (57%). Other literature has also shown that communities encouraging breastfeeding exist on various social media platforms (30,35, 40). This then gives evidence that social media, through influencers, can be used as a medium for health communication.

Conduct additional research to highlight the impact influencers have on infant feeding decisions of their followers

The topic of influencer marketing and its impact on infant and young child nutrition is still under-researched. Additional studies utilising software to search for infant feeding related content on social media, other than manually searching for content as in this study should be done. Apart from research conducted on company sponsored influencer posts, other study populations such as exclusive (member only) and open mom groups on all social media platforms should also be reviewed. Company websites and all online activity should be monitored in order to highlight their marketing practises, and to reveal the effects this has on the infant feeding methods of the followers.

Audience reception research is also needed to understand how followers engage with influencer content beyond direct interactions with the social media platform(s).

Educate Influencers on need for research before endorsing brands

There is need for influencers to be educated on the importance of doing due diligence in research before endorsing brands because they might not have knowledge that their adverts may be contravening health regulations.

Determine reach of influencers on Instagram based on number of followers

It is important to find the exact reach of Influencer posts, especially posts pertaining to infant feeding. On some social media platforms, it is possible to calculate the "reach" of posts, based on number of followers. In this study, however, this could not be established because this information needs to be paid for. This is an area that could warrant further analysis.

REFERENCES

1. Opie G, Simmer K. The International Code of Marketing of Breastmilk Substitutes. J Paediatr Child Health. 2004 Jul;40(7):348–9.

2. Geyser W. What is an Influencer? - Social Media Influencers Defined [Updated 2021] [Internet]. Influencer Marketing Hub. 2017 [cited 2021 Sep 14]. Available from: https://influencermarketinghub.com/what-is-an-influencer/

3. Writer S. The biggest and most popular social media platforms in South Africa, including TikTok [Internet]. [cited 2021 Sep 1]. Available from: https://businesstech.co.za/news/internet/502583/the-biggest-and-most-popular-social-media-platforms-in-south-africa-including-tiktok/

4. State of Influencer Marketing in South Africa | Hype - Journal | HypeAuditor Blog [Internet]. 2020 [cited 2021 Sep 14]. Available from: https://hypeauditor.com/blog/state-of-influencer-marketing-in-south-africa/

5. ZAF-2012-Regulations-relating-to-foodstuffs-for-infants-and-young-children-R.-No.-991-of-2012_0.pdf [Internet]. [cited 2021 Sep 13]. Available from: http://blogs.sun.ac.za/iplaw/files/2013/12/ZAF-2012-Regulations-relating-to-foodstuffs-for-infants-and-young-children-R.-No.-991-of-2012_0.pdf

6. Pacifier definition and meaning | Collins English Dictionary [Internet]. [cited 2021 Oct 7]. Available from: https://www.collinsdictionary.com/dictionary/english/pacifier

7. World Health Organization. February 2019. Exclusive breastfeeding for optimal growth, development and health of infants. Available: http://www.who.int/elena/titles/exclusive_breastfeeding/en/ - Google Search [Internet]. [cited 2021 Feb 8]. Available from: https://www.google.com/search?q=World+Health+Organization.+February+2019.+Exclusive+breastfeeding+for+optimal+growth%2C+development+and+health+of+infants.+Available%3A+http%3A%2F%2Fwww.who.int%2Felena%2Ftitles%2Fexclusive_breastfeeding%2Fen%2F&rlz=1C1RUCY_enZA839ZA842&oq=World+Health+Organization.+February+2019.+Exclusive+breastfeeding+for+optimal+growth%2C+development+and+health+of+infants.+Available%

3A+http%3A%2F%2Fwww.who.int%2Felena%2Ftitles%2Fexclusive_breastfeeding%2Fen%2F&aqs=chrome..69i57.2135j0j7&sourceid=chrome&ie=UTF-8

8. Infant and young child feeding [Internet]. [cited 2021 Apr 21]. Available from: https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding

9. Jones G, Steketee RW, Black RE, Bhutta ZA, Morris SS. How many child deaths can we prevent this year? The Lancet. 2003 Jul;362(9377):65–71.

10. Schwarz EB, Nothnagle M. The Maternal Health Benefits of Breastfeeding. Am Fam Physician. 2015 May 1;91(9):602–4.

11. Kareem SY, Mohammed AK. The Impact of Breastfeeding on Breast Cancer Among Women in Sulaimani City. J Univ Raparin. 2020 Aug 21;7(3):437–52.

12. Health ND of, ICF. South Africa Demographic and Health Survey 2016. 2019 Jan 1 [cited 2021 Apr 1]; Available from: https://dhsprogram.com/publications/publication-fr337-dhs-final-reports.cfm

13. Meyer A, Spuy DAVD, Plessis LMD. The rationale for adopting current international breastfeeding guidelines in South Africa. Matern Child Nutr. 2007;3(4):271–80.

14. World Health Organization, editor. International code of marketing of breast-milk substitutes. Geneva : Albany, N.Y: World Health Organization ; Obtainable from WHO Publications Centre; 1981. 36 p.

15. Halpern R, Coelho R. Excessive crying in infants. J Pediatr (Rio J). 2016 May 1;92(3, Supplement 1):S40–5.

16. Ahishakiye J, Bouwman L, Brouwer ID, Matsiko E, Armar-Klemesu M, Koelen M. Challenges and responses to infant and young child feeding in rural Rwanda: a qualitative study. J Health Popul Nutr. 2019 Dec 12;38(1):43.

17. Dewey KG. Maternal and Fetal Stress Are Associated with Impaired Lactogenesis in Humans. J Nutr. 2001 Nov 1;131(11):3012S-3015S.

18. Yılmaz E, Doğa Öcal F, Vural Yılmaz Z, Ceyhan M, Kara OF, Küçüközkan T. Early initiation and exclusive breastfeeding: Factors influencing the attitudes of mothers who gave birth in a baby-friendly hospital. Turk J Obstet Gynecol. 2017 Mar;14(1):1–9.

19. Mills L. The regulations relating to foodstuffs for infants and young children (R 991): A formula for the promotion of breastfeeding or censorship of commercial speech? Potchefstroom Electron Law JournalPotchefstroomse Elektron Regsblad. 2014 May 2;17(1):253.

20. vie167953.pdf [Internet]. [cited 2021 Oct 7]. Available from: http://extwprlegs1.fao.org/docs/pdf/vie167953.pdf

21. Piwoz EG, Huffman SL. The Impact of Marketing of Breast-Milk Substitutes on WHO-Recommended Breastfeeding Practices. Food Nutr Bull. 2015 Dec 1;36(4):373–86.

22. Brady JP. Marketing breast milk substitutes: problems and perils throughout the world. Arch Dis Child. 2012 Mar 14;97(6):529–32.

23. Lozada-Tequeanes AL, Hernández-Cordero S, Shamah-Levy T. Marketing of breast milk substitutes on the internet and television in Mexico. J Paediatr Child Health. 2020;56(9):1438–47.

24. Stubb C, Nyström A-G, Colliander J. Influencer marketing: The impact of disclosing sponsorship compensation justification on sponsored content effectiveness. J Commun Manag. 2019 Jan 1;23(2):109–22.

25. Lou C, Yuan S. Influencer Marketing: How Message Value and Credibility Affect Consumer Trust of Branded Content on Social Media. J Interact Advert. 2019 Jan 2;19(1):58–73.

26. Becker GE. Marketing Breastfeeding Substitutes: A Discussion Document. Int J Environ Res Public Health. 2020 Dec 10;17(24).

27. Ajzen I. From Intentions to Actions: A Theory of Planned Behavior. In: Kuhl J, Beckmann J, editors. Action Control: From Cognition to Behavior [Internet]. Berlin, Heidelberg: Springer; 1985 [cited 2021 Apr 21]. p. 11–39. (SSSP Springer Series in Social Psychology). Available from: https://doi.org/10.1007/978-3-642-69746-3_2

28. Piwoz EG, Huffman SL. The Impact of Marketing of Breast-Milk Substitutes on WHO-Recommended Breastfeeding Practices. Food Nutr Bull. 2015 Dec;36(4):373–86.

29. Brady JP. Marketing breast milk substitutes: problems and perils throughout the world. Arch Dis Child. 2012 Mar 14;97(6):529–32.

30. 35100rg9700gon184.pdf [Internet]. [cited 2021 Oct 7]. Available from: https://www.gov.za/sites/default/files/gcis_document/201409/35100rg9700gon184.pdf

31. Pereira-Kotze C, Doherty T, Swart EC. Use of social media platforms by manufacturers to market breast-milk substitutes in South Africa. BMJ Glob Health. 2020 Dec 1;5(12):e003574.

32. Breast Milk Substitutes Market Statistics | 2019-2025 Share Projections [Internet]. Global Market Insights, Inc. [cited 2021 Sep 1]. Available from: https://www.gminsights.com/industry-analysis/breast-milk-substitutes-market

33. South Africa: digital population 2021 [Internet]. Statista. [cited 2021 Apr 21]. Available from: https://www.statista.com/statistics/685134/south-africa-digital-population/

34. Individuals using the Internet (% of population) - South Africa | Data [Internet]. [cited 2021 Sep 1]. Available from: https://data.worldbank.org/indicator/IT.NET.USER.ZS?locations=ZA

35. South Africa mobile internet user reach 2026 [Internet]. Statista. [cited 2021 Oct 9]. Available from: https://www.statista.com/statistics/972866/south-africa-mobile-internet-penetration/

36. SA has some of Africa's most expensive data, a new report says – but it is better for the richer [Internet]. BusinessInsider. [cited 2021 Oct 9]. Available from: https://www.businessinsider.co.za/how-sas-data-prices-compare-with-the-rest-of-the-world-2020-5

37. Why do South Africans pay such high costs for mobile data? [Internet]. The Mail & Guardian. 2017 [cited 2021 Oct 9]. Available from: https://mg.co.za/article/2017-03-31-00-why-do-south-africans-pay-such-high-costs-for-mobile-data/

38. Budree A, Fietkiewicz K, Lins E. Investigating usage of social media platforms in South Africa. Afr J Inf Syst [Internet]. 2019 Oct 1;11(4). Available from: https://digitalcommons.kennesaw.edu/ajis/vol11/iss4/1

39. Asiodu IV, Waters CM, Dailey DE, Lee KA, Lyndon A. Breastfeeding and use of social media among first-time African American mothers. J Obstet Gynecol Neonatal Nurs JOGNN. 2015 Apr;44(2):268–78.

40. Ching C, Zambrano P, Nguyen TT, Tharaney M, Zafimanjaka MG, Mathisen R. Old Tricks, New Opportunities: How Companies Violate the International Code of Marketing of Breast-Milk Substitutes and Undermine Maternal and Child Health during the COVID-19 Pandemic. Int J Environ Res Public Health. 2021 Jan;18(5):2381.

41. Maharlouei N, Pourhaghighi A, Raeisi Shahraki H, Zohoori D, Lankarani KB. Factors Affecting Exclusive Breastfeeding, Using Adaptive LASSO Regression. Int J Community Based Nurs Midwifery. 2018 Jul;6(3):260–71.

42. Trafford Z, Jewett S, Swartz A, LeFevre AE, Winch PJ, Colvin CJ, et al. Reported infant feeding practices and contextual influences on breastfeeding: qualitative interviews with women registered to MomConnect in three South African provinces. Int Breastfeed J. 2020 Sep 14;15(1):81.

43. WHO | NetCode toolkit for ongoing monitoring and periodic assessment of the Code [Internet]. WHO. World Health Organization; [cited 2021 Sep 1]. Available from: http://www.who.int/nutrition/netcode/toolkit/en/

44. Maternal, infant and young child nutrition. :2.

45. WHO | Regulation of marketing breast-milk substitutes [Internet]. WHO. World Health Organization; [cited 2021 Apr 21]. Available from: http://www.who.int/elena/titles/bbc/regulation_breast-milk_substitutes/en/

46. Michaud-Létourneau I, Gayard M, Pelletier DL. Translating the International Code of Marketing of Breast-milk Substitutes into national measures in nine countries. Matern Child Nutr. 2019;15(S2):e12730.

47. talkwalker.com. [2020] Social media statistics and usage in South Africa [Internet]. Talkwalker. [cited 2021 Mar 17]. Available from: https://www.talkwalker.com/blog/social-media-stats-south-africa

48. Horwood C, Haskins L, Engebretsen I, Connolly C, Coutsoudis A, Spies L. Are we doing enough? Improved breastfeeding practices at 14 weeks but challenges of non-initiation and early cessation of breastfeeding remain: findings of two consecutive cross-sectional surveys in KwaZulu-Natal, South Africa. BMC Public Health. 2020 Apr 3;20(1):440.

49. Scott JA, Binns CW, Oddy WH, Graham KI. Predictors of breastfeeding duration: evidence from a cohort study. Pediatrics. 2006 Apr;117(4):e646-655.

50. Piwoz EG, Huffman SL. The Impact of Marketing of Breast-Milk Substitutes on WHO-Recommended Breastfeeding Practices. Food Nutr Bull. 2015 Dec 1;36(4):373–86.

51. Durako S, Thompson M, Diallo MS, Aronson K, Ma R, Assistant. In-Country Assessments of Breast-milk Substitute (BMS) Companies' Compliance with the International Code of Marketing of Breast-milk Substitutes Final Vietnam Report. 2016.

52. Abrahams SW. Milk and Social Media: Online Communities and the International Code of Marketing of Breast-milk Substitutes. J Hum Lact. 2012 Aug 1;28(3):400–6.

53. Caliandro A. Digital Methods for Ethnography: Analytical Concepts for Ethnographers Exploring Social Media Environments. J Contemp Ethnogr. 2018 Oct 1;47(5):551–78.

54. What is digital ethnography? | GreenBook | GreenBook.org [Internet]. [cited 2021 Mar 31]. Available from: https://www.greenbook.org/marketing-research/What-Is-Digital-Ethnography

55. South Africa Instagram users by age group 2021 [Internet]. Statista. [cited 2021 Sep 14]. Available from: https://www.statista.com/statistics/1028334/south-africa-instagram-user-age-distribution/

56. D'Angelo P, Kuypers J. Doing News Framing Analysis: Empirical and Theoretical Perspectives. 2010.

57. Asiodu I, Waters C, Dailey D, Lee K, Lyndon A. Breastfeeding and Use of Social Media Among First-Time African American Mothers. J Obstet Gynecol Neonatal Nurs. 2015 Feb 1;44.

58. Tomfohrde O, Reinke J. Breastfeeding mothers' use of technology while breastfeeding. Comput Hum Behav. 2016 Nov 1;64:556–61.

59. Influencer Marketing in 2019: How to Work With Social Media Influencers [Internet]. Social Media Marketing & Management Dashboard. 2019 [cited 2021 Mar 17]. Available from: https://blog.hootsuite.com/influencer-marketing/

60. Marcon AR, Bieber M, Azad MB. Protecting, promoting, and supporting breastfeeding on Instagram. Matern Child Nutr. 2019 Jan;15(1):e12658.

61. Influencer Marketing vs. Traditional Marketing Battle [Internet]. ProductLead Blog. 2019 [cited 2021 Mar 17]. Available from: https://productlead.me/blog/ads-vs-influencer-marketing/

62. World Health Organization and United Nations Children's Fund (UNICEF) - 2020 - Baby-friendly hospital initiative training course .pdf [Internet]. [cited 2021 Sep 14]. Available from: https://www.who.int/nutrition/publications/infantfeeding/bfhi-implementation-2018.pdf

63. D'Angelo P, Kuypers JA. Doing News Framing Analysis: Empirical and Theoretical Perspectives. Routledge; 2010. 393 p.

64. Framing Theory [Internet]. Mass Communication Theory. 2011 [cited 2021 Mar 17]. Available from: https://masscommtheory.com/theory-overviews/framing-theory/

65. Wellington L, Prasad S. Should breastfeeding babies be given pacifiers? J Fam Pract. 2012 May;61(5):E1–3.

66. Using Instagram hashtags to grow your audience [Internet]. Sprout Social. 2020 [cited 2021 Mar 18]. Available from: https://sproutsocial.com/insights/instagram-hashtags/

67. الصحة فبو. Ministry Of Health Saudi Arabia [Internet]. Ministry Of Health Saudi Arabia. [cited 2021 Apr 14]. Available from: https://www.moh.gov.sa/en/Pages/Default.aspx

68. Bremer K, Lee M. Metaphors in Marketing: Review and Implications For Marketers. ACR North Am Adv [Internet]. 1997 [cited 2021 Apr 14];NA-24. Available from: https://www.acrwebsite.org/volumes/8079/volumes/v24/NA-24/full

69. the-who-code-of-marketing-of-breast-milk-substitutes.pdf [Internet]. [cited 2021 Mar 17]. Available from: https://www.hse.ie/file-library/the-who-code-of-marketing-of-breast-milk-substitutes.pdf

70. Hauck FR, Omojokun OO, Siadaty MS. Do pacifiers reduce the risk of sudden infant death syndrome? A meta-analysis. Pediatrics. 2005 Nov;116(5):e716-723.

71. WHO | NetCode toolkit for ongoing monitoring and periodic assessment of the Code [Internet]. WHO. World Health Organization; [cited 2021 Apr 20]. Available from: http://www.who.int/nutrition/netcode/toolkit/en/

72. Marketing of breast milk substitutes: national implementation of the international code, status report 2020 [Internet]. [cited 2021 Apr 20]. Available from: https://www.who.int/publications-detail-redirect/9789240006010

73. Moukarzel S, Rehm M, Daly AJ. Breastfeeding promotion on Twitter: A social network and content analysis approach. Matern Child Nutr. 2020;16(4):e13053.

Appendix 1: Plagiarism declaration and TurnItIn Report

SCHOOL OF PUBLIC HEALTH

STUDENT DECLARATION

PLAGIARISM

I **_Sukoluhle Pilime**_____ (student number: ____**1304095**_____) am a post-graduate student registered for the degree / programme __**MPH SBCC**_____ in the Wits School of Public Health.

I am submitting written work for assessment for the module_**Research Report**

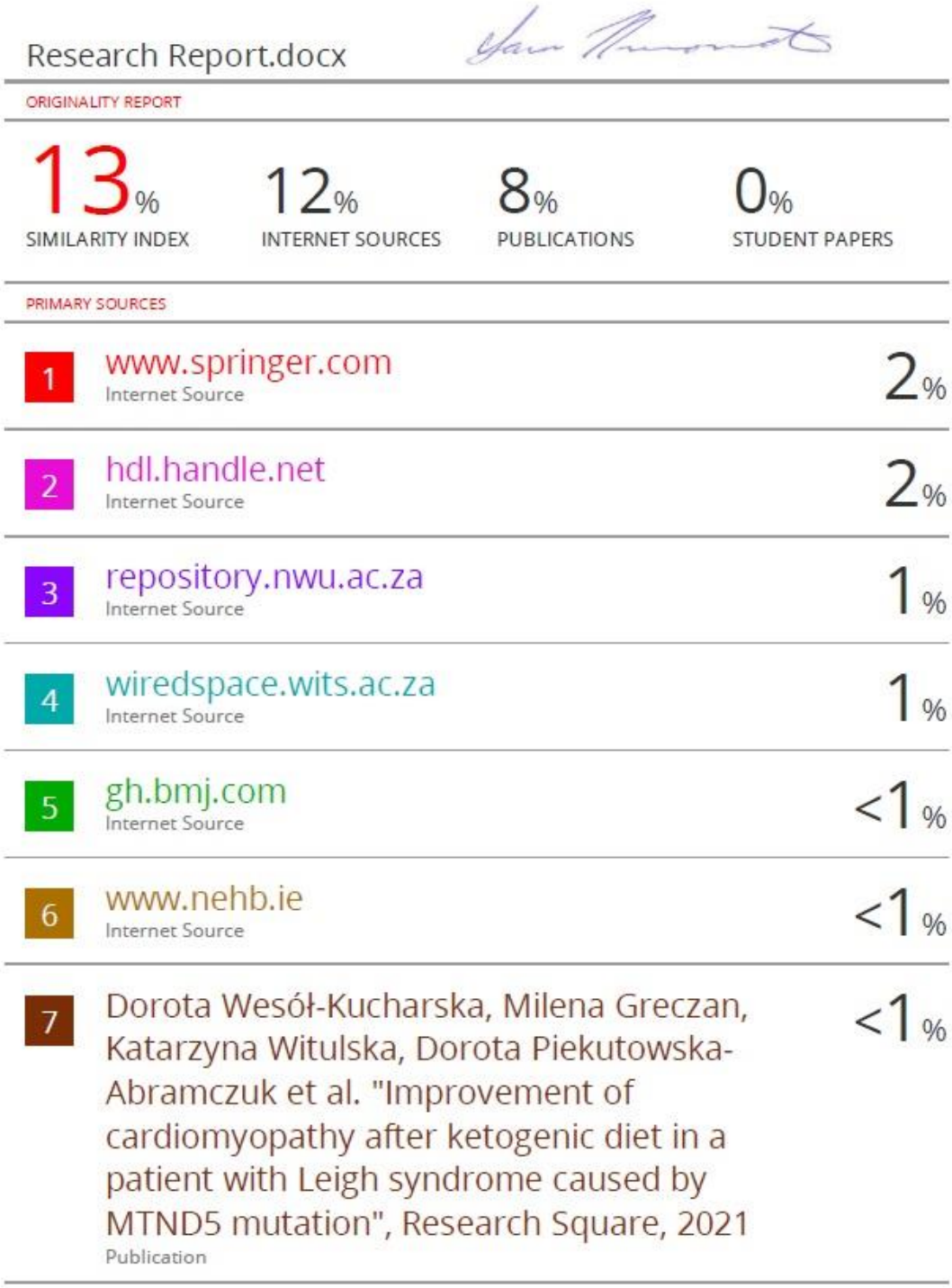
I hereby declare the following:

- I am aware that plagiarism is the use of someone else's work without their permission and/or without acknowledging the original source.
- I am aware that plagiarism is wrong
- I confirm that the work submitted for the above course and module, is my own work, except where I have stated otherwise
- I have followed the required conventions in referencing the thoughts and ideas of others
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or if I have failed to acknowledge the ideas or writing.

Signature: _________ Date: _21/04/2021_____

Signed TurnItIn Report

Note: The report was reviewed by the supervisor and most instances that were highlighted relate to the Author Guidelines and required journal statements.



Research Report.docx

ORIGINALITY REPORT

13%	12%	8%	0%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	www.springer.com Internet Source	2%
2	hdl.handle.net Internet Source	2%
3	repository.nwu.ac.za Internet Source	1%
4	wiredspace.wits.ac.za Internet Source	1%
5	gh.bmj.com Internet Source	<1%
6	www.nehb.ie Internet Source	<1%
7	Dorota Wesół-Kucharska, Milena Greczan, Katarzyna Witulska, Dorota Piekutowska-Abramczuk et al. "Improvement of cardiomyopathy after ketogenic diet in a patient with Leigh syndrome caused by MTND5 mutation", Research Square, 2021 Publication	<1%

Appendix 2: Ethics waiver

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)

Office of the Deputy Vice-Chancellor (Research & Post Graduate Affairs)

TO: Ms S Pilime
School: Public Health
Medical School
University

E-mail: sppilime@gmail.com

CC: Supervisor: Dr S Nieuwoudt <Sara.Nieuwoudt@wits.ac.za>
and <HREC-Medical.ResearchOffice@wits.ac.za>

FROM: Iain Burns
Human Research Ethics Committee (Medical)
Tel: 011 717 1252

E-mail: Iain.Burns@wits.ac.za

DATE: 21/11/2019

REF: *R14/49*

PROTOCOL NO: W-CBP-191121-01 (This is your ethics application study reference number. Please quote this reference number in all correspondence relating to this study)

PROJECT TITLE: *Marketing of breast milk substitutes in relation to crying, sleeping and posseting by Instagram influencers in South Africa, 2019*

Please find attached the Ethics Waiver Certificate for the above project. I hope it goes well and that an article in a recognized publication comes out of it. This will reflect well on your professional standing and contribute to the Government funding of the University.

MSWorks2000/Iain0007/ClearScanWaiver.wps

Appendix 3: International Breastfeeding Journal guidelines for authors

The relevant guidelines for this study are summarised from the following URL: [https://internationalbreastfeedingjournal.biomedcentral.com/submission-guidelines]

Title page

The title page should:

- present a title that includes, if appropriate, the study design e.g.:

  "A versus B in the treatment of C: a randomized controlled trial", "X is a risk factor for Y: a case control study", "What is the impact of factor X on subject Y: A systematic review"

- list the full names and institutional addresses for all authors
- indicate the corresponding author

Abstract

The Abstract should not exceed 350 words. Please minimize the use of abbreviations and do not cite references in the abstract. The abstract must include the following separate sections:

Background**:** the context and purpose of the study
Methods**:** how the study was performed and statistical tests used
Results**:** the main findings
Conclusions**:** brief summary and potential implications
Keywords
Three to ten keywords representing the main content of the article.

Background

The Background section should explain the background to the study, its aims, a summary of the existing literature and why this study was necessary or its contribution to the field.

Methods

The methods section should include:

- the aim, design and setting of the study
- the characteristics of participants or description of materials
- a clear description of all processes, interventions and comparisons. Generic drug names should generally be used. When proprietary brands are used in research, include the brand names in parentheses
- the type of statistical analysis used, including a power calculation if appropriate

Results

This should include the findings of the study including, if appropriate, results of statistical analysis which must be included either in the text or as tables and figures.

Discussion

This section should discuss the implications of the findings in context of existing research and highlight limitations of the study.

Conclusions

This should state clearly the main conclusions and provide an explanation of the importance and relevance of the study reported.

List of abbreviations

If abbreviations are used in the text, they should be defined in the text at first use, and a list of abbreviations should be provided.

Declarations

All manuscripts must contain the following sections under the heading 'Declarations':

- **Ethics approval and consent to participate**: Manuscripts reporting studies involving human participants, human data or human tissue must:
  - include a statement on ethics approval and consent (even where the need for approval was waived)
  - include the name of the ethics committee that approved the study and the committee's reference number if appropriate

Consent for publication: If your manuscript contains any individual person's data in any form (including any individual details, images or videos), consent for publication must be obtained from that person. You can use your institutional consent form or

if you prefer. You should not send the form to us on submission, but we may request to see a copy at any stage (including after publication).

Availability of data and materials

All manuscripts must include an 'Availability of data and materials' statement. Data availability statements should include information on where data supporting the results reported in the article can be found including, where applicable, hyperlinks to publicly archived datasets analysed or generated during the study. By data we mean the minimal dataset that would be necessary to interpret, replicate and build upon the findings reported in the article. We recognise it is not always possible to share research data publicly, for instance when individual privacy could be compromised, and in such instances data availability should still be stated in the manuscript along with any conditions for access.

Data availability statements can take one of the following forms (or a combination of more than one if required for multiple datasets):

- The datasets generated and/or analysed during the current study are available in the [NAME] repository, [PERSISTENT WEB LINK TO DATASETS]
- The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.
- All data generated or analysed during this study are included in this published article [and its supplementary information files].
- The datasets generated and/or analysed during the current study are not publicly available due [REASON WHY DATA ARE NOT PUBLIC] but are available from the corresponding author on reasonable request.
- Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.
- The data that support the findings of this study are available from [third party name] but restrictions apply to the availability of these data, which were used under license

for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of [third party name].

- Not applicable. If your manuscript does not contain any data, please state 'Not applicable' in this section.

More examples of template data availability statements, which include examples of openly available and restricted access datasets, are available

.

Authors' information

Full names and email addresses of all co-authors on your manuscript.

Footnotes

Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables. Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data). Footnotes to the title or the authors of the article are not given reference symbols. Always use footnotes instead of endnotes.

References

Vancouver reference style

Appendix 4: Signed letter stating the contribution of the candidate to the manuscript

Sukoluhle Pilime
18 Rose Street, 113 East Lake, Florida,
1709
Roodepoort

21 April 2021

University of the Witwatersrand

School of Public Health

27 St Andrews Road

Parktown 2193

South Africa

To Whom It May Concern:

Dear Sir/ Madam

RE: Contribution of candidate to the manuscript

This letter serves to highlight the contribution by Sukoluhle to the manuscript. Sukoluhle led the collection of data. She also led the analysis and interpretation of the data that was used in the study, with support from her supervisor. Sukoluhle also led the write up of the manuscript.

Sincerely,

Sukoluhle Pilime

1304095@students.wits.ac.za

+27 (61) 206 6426

